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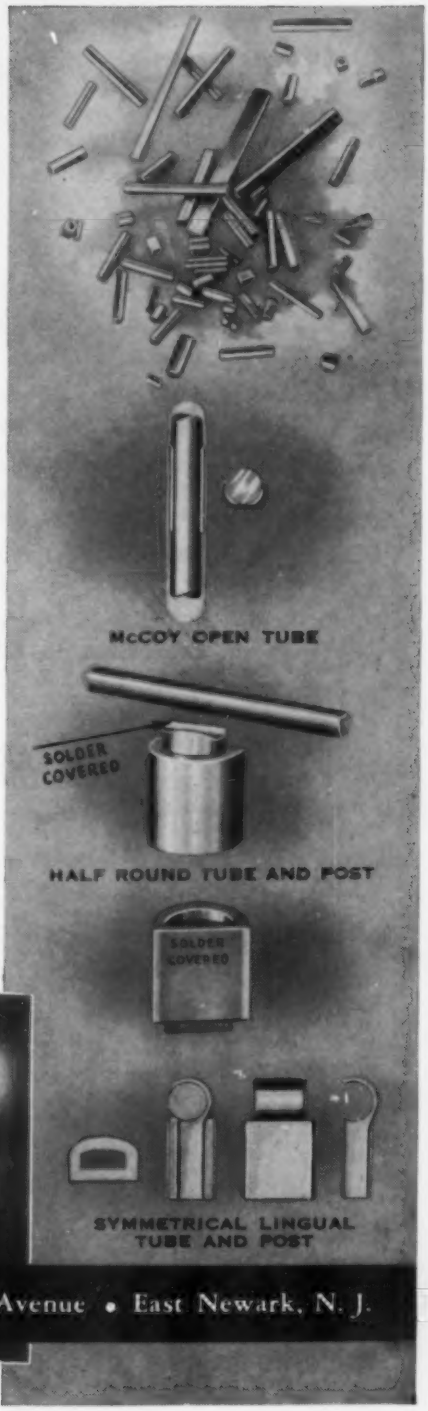

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Original Articles

A NEW APPROACH TO THE TREATMENT OF MANDIBULAR PROGNATHISM

JOSEPH K. GOLD, D.M.D., HOLYOKE, MASS.

INTRODUCTION

IN THIS paper, an attempt will be made to discuss mandibular prognathism with its etiology, and to describe a new method of treatment.

Mandibular prognathism may be described as a dentofacial deformity characterized by protrusion of the mandible. The mandibular protrusion may be real or it may be apparent, in which case it represents a failure of anterior development of the maxillary arch. This may be termed maxillary retrognathism.[1] When cases of mandibular prognathism are seen early, there is little change in the mandible itself, but there is always a deficiency in the maxillary arch, either in width or in length or in both width and length. This is the reason there are more cross-bite cases proportionately among Angle Class III (mesioversion) cases than in the other categories. When seen later, the mandible shows changes in width, length, and in the gonial angle. According to Broadbent,[2] "The changes noted, as a result of Class III malocclusion are an excessive forward growth of the symphysis of the mandible, a reduction in the vertical growth at the angle of the mandible and a retardation of the forward and downward growth of the maxillae."

In mesioversion cases, there is always a faulty interdigitation of the teeth. The teeth in the buccal segments of the mandibular arch are mesial to their antagonists in the maxillary arch. This may be either unilateral or bilateral. The teeth in the maxillary anterior segment are always lingual to the teeth in the anterior segment of the mandibular arch. The angle of inclination of the teeth in the mandibular arch is usually more acute, in a lingual direction, than is found in a normal denture. In addition to the mandibular prognathism, the dentures may present almost any of the variations present in cases requiring orthodontic treatment.

This thesis was written and submitted to the American Board of Orthodontics in partial fulfillment of the requirements for certification.

Regarding incidence, E. H. Angle,[3] in an examination of several thousand cases of malocclusion, found 42 Class III (mesioversion) cases per thousand, or 4.2 per cent of the total. E. I. Silver,[4] in an examination of 342 cases of all types, found 19, or 5.5 per cent of the total, to be Angle Class III cases. In an examination of 445 of my own cases, thirty-four belong in Angle's Class III classification, which is 7.6 per cent of all cases examined.*

ETIOLOGY

The etiology of mandibular prognathism seems less clouded by the fog of intangibility which makes it difficult to assign a specific cause to each of the various types of malocclusion, dental irregularity, or dentofacial deformity.

Two factors are given prominence in any discussion of the etiology of mandibular prognathism: enlarged tonsils and heredity. Let us discuss the role of tonsils first. In this connection E. H. Angle[5] stated: "Deformities under this class begin at about the age of eruption of the first permanent molars, or even much earlier, and are always associated at this age with enlarged tonsils and the habit of protruding the mandible, the latter probably affording relief in breathing." It is well known that tonsils may be large congenitally and they may become enlarged because of infection. However, badly infected tonsils may be small or even submerged. Anatomically, the tonsils are situated between the anterior and the posterior faucial pillars. When the tonsils became enlarged, they grow toward each other from either side of the throat, with very little pressure against the mandible being possible. A deflected septum or an overgrowth of adenoidal tissue provides more of an obstruction to breathing than enlarged tonsils. There does not seem to be convincing evidence that mere enlargement of tonsillar tissue is causative in modifying the position of the mandible.

To quote Brash[6]: "There is no satisfactory proof that the presence of adenoids, the diminution or absence of nasal breathing, or the constant habit of mouth-breathing can affect the form of the jaws or the position of the teeth in any of the ways that have been suggested. It has still to be proved that there is any significant correlation between the presence of adenoids and the incidence of the deformities of the jaws and palate." In other words, coexistence is no proof of causality.

On the other hand, much can be said for heredity as an etiological factor in the production of mandibular prognathism. "The best known example of the transmission of a distinctive abnormal condition is certainly the mandibular prognathism of the Habsburg and other dynasties."[7] Rubbrecht,[8] in his work dealing with the House of Habsburg, stated: "It is not far from 100% in the pedigree, made up by us, of the House of Habsburg." Experimentally, mandibular prognathism has been produced in dogs by Dr. C. R. Stockard at the Cornell Experimental Morphology Farm. It is his opinion that "the general mechanism for the development of these characters seems associated with,

*The disparity between Angle's incidence and the latter figure may in part be explained as a greater awareness of the deformity by today's parents. In this group of 34, 14 were girls and 20 were boys; the approximate percentage for the groups was girls, 41% and boys, 59%.

and is probably regulated by, peculiar deviations in endocrine secretions which may be primarily inherited characters.''[9]

According to Dr. Carl C. Seltzer,[10] ''It is becoming increasingly clear that there is a strong constitutional factor operating in connection with the appearance of mandibular prognathism. The impression gained is that this condition is rather the result of constitutional disharmonic growth factors than of functional origin. From a relatively small series of unpublished data there appears to be an association between mandibular prognathism and body build.''

In this connection Dr. A. LeRoy Johnson[11] stated: ''Our investigations suggest the probability that a larger number of the Class III cases are due to developmental arrests of the upper face with modification in the form of the mandible because of its adaptation to the distorted upper face and the developmental arrests are, in some instances at least, an expression of genetic constitution.''

We recognize, of course, that mechanisms apart from congenital, such as diseases of the pituitary gland, posture, premature bilateral loss of the six-year molars, and imitation, may produce mandibular prognathism. Regarding the pituitary gland, it is sufficient to mention the clinical cases of acromegaly presented in the literature. However, it must be emphasized that in endocrine disturbance not only the face and mandible, but also the body as a whole is affected. With respect to posture, it is interesting that kyphosis, the angular curvature of the spine, also known as ''humpback,'' indirectly produces a protrusion of the mandible. Premature loss of the maxillary six-year molars may result in a foreshortening of the maxillary arch, which in turn produces mandibular prognathism. Although some observers have negated the influence of imitation in the production of mandibular prognathism, in my experience this factor cannot be eliminated. To cite an example, one of my patients revealed a history of having become prognathous during a period when a favorite relative who had a prognathic mandible was a frequent visitor. This is always an anatomical possibility. The flat plane of occlusion of the deciduous denture makes it simple for the child to reposition his mandible anteriorly. The relative softness of the deciduous enamel permits of rapid wear, and in a rather short period of time this forward position becomes the new position of the mandible.

TREATMENT

While there is wide divergence of opinion upon the subject of time for treatment in the other classes of malocclusion, there is almost unanimous agreement that mandibular prognathism should be treated as early as possible. Implicit in this consensus of clinical opinion is the fact that mandibular prognathism is not merely a dental anomaly but is, in fact, a dentofacial deformity. This means that this type of case should be treated before the maxilla and the mandible have had time to undergo the retrogressive changes mentioned earlier.

The suggested method of treatment is based upon the hypothesis that the majority of cases of mandibular prognathism are the result of a forward posi-

tioning of the mandible rather than a dental or alveolar protraction.

The method of treatment here presented, except in certain cases to be discussed later, eliminates the use of bands and arch wire for the mandibular teeth. Instead, a chin sling consisting of a headcap and a chin cap is used to reposition the mandible posteriorly.

The headcap is the usual apparatus used for occipital anchorage, but the chin cap is made of muslin instead of metal. Four hooks are sewed to the corners of the chin cap and four pieces of elastic webbing, to which eyelets have been sewed, connect the chin cap to the headcap. The muslin chin cap is relatively inexpensive, adapts itself perfectly to the chin, and can be laundered in the morning and worn again the same night. Its greatest advantage over the metal chin cap is that it absorbs perspiration and does not cause irritation of the skin. Its position upon the patient may be seen in Figs. 1 and 2.

Fig. 1. Fig. 2.

The headcap should fit snugly upon the head of the patient. The chin cap is placed in position and the elastic straps hooked on. With the assistant holding the two elastic straps on one side, the other two straps are stretched to their positions, marked, and pinned. The same procedure is followed on the opposite side. Then the headcap is removed from the patient and the straps sewed on, using dental floss. When this has been done, the headcap-chin cap assembly, or chin sling, is replaced upon the head of the patient for an examination of the amount, direction, and equalization of pull.

In addition, a celluloid bite plane, 0.020 inch in thickness, is given to the child with instructions for its use. The celluloid bite plane is rhomboidal in shape and cut wide enough to include the four maxillary anterior teeth. The

mother presses the bite plane hard against the mandibular teeth, while the child bites against the plane. The usual time spent using the bite plane is thirty minutes each day. This time is broken up into either two fifteen-minute periods, or three ten-minute periods for younger children. A good time for the final application of pressure is before the child goes to bed. The chin sling is placed in position immediately following this treatment. Fig. 3 is a photograph of the celluloid bite plane.

Bands with buccal tubes (0.036 inch inside diameter) are cemented to the maxillary molar teeth. The tubes are to receive a Johnson twin wire with 0.056-inch coil springs on the end sections. Half-round tubes, for the reception of the lingual arch, may be soldered to the bands if a cross-bite is present or if lateral expansion is indicated. Unless there is serious malalignment, the maxillary incisor teeth are not banded. Instead, stainless steel ligature wire is used to tie the maxillary anterior teeth to the Johnson twin wire. The reason is twofold:

1. The Johnson twin wire is used for a very short period of time; the problem of etching of the enamel does not enter if the teeth are carefully brushed.

2. Bracket bands of any type will prevent the maxillary anterior teeth from settling as rapidly, as completely, and with the production of as deep an overbite as occurs when no anterior bracket bands are placed.

Fig. 3.

Working with children in the 4- to 8-year age group, and with complete cooperation of child and parent, treatment is fairly rapid. The correction of mandibular prognathism by this method demands the utmost in cooperation. This is not difficult to obtain when instructions are carefully given and a picture of the final result shown to the child and parent. When cooperation is not given freely, it may be due to a lack of understanding of instructions or to a disbelief that such a correction is possible.

Timing is an important factor in treatment. It entails watching the progress of the case and seizing each opportunity to make the right adjustment at the right moment, so that progress will be in one direction and that for the best.

In the usual plan of treatment, using conventional appliances, it often happens that even as the maxillary anterior teeth are being brought labially, the child will place the mandible farther and farther forward. Progress is impeded because the mandibular anterior teeth, closing labially to the maxillary anterior teeth, drive the maxillary teeth lingually and defeat our efforts. The chin sling, used in conjunction with conventional appliances, may be employed to prevent this occurrence and has been of great help in speeding correction.

In this plan of treatment, after some progress has been made, the child is given a mirror and shown his bite in edge-to-edge position. He is also shown a normal overbite so that he will know our objective. He is told that biting in front of the maxillary anterior teeth will move them backward. He is asked to bite edge-to-edge as much as possible, and to avoid biting in front of his maxillary teeth. As soon as the maxillary anterior teeth have reached a position slightly forward of edge-to-edge, the Johnson twin arch wire is removed, and the chin sling worn as much as possible. This permits the rapid settling of the maxillary anterior teeth in a labial position and the production of a deep overbite which is so desirable in this type of case.

CASE REPORTS OF MANDIBULAR PROGNATHISM WITH SOME OF ITS VARIATIONS

I. *Mandibular Prognathism Complicated by Loss of Mandibular Molars.*— The first patient to be treated by this method was I. B., aged 10 years, with a history of poor health and a high caries index. Tonsils and adenoids had been removed.

Clinical examination, photographs, and a study of the models indicated that we were dealing with a case of mandibular prognathism. The maxillary arch, which was normal in width, presented a deviation of the median line toward the right, with mesial migration of the right lateral half. The mandibular arch resembled a partially edentulous case, with the right and left six-year molars having been lost through extraction. The mandible was in a position anterior to normal.

Roentgenographic findings disclosed that the maxillary right lateral incisor was congenitally missing, and that this was true of the mandibular right and left second premolars. The mandibular first premolars were present, but as yet unerupted, and the mandibular right and left six-year molars had been lost through extraction. The mandibular deciduous canines were still in position. From an etiological standpoint, the factors contributing to the production of mandibular prognathism in this case were the premature loss of the mandibular right and left six-year molars, plus the congenital absence of the maxillary right lateral incisor. Endocrine disturbance in this case is suspected, but unverified. The right half of the body above the hips, including the arm, is noticeably larger than the left.

The plan of treatment for the correction of mandibular prognathism in this case was divided into two parts:

1. Development of the anterior section of the maxillary arch by a labial movement of the maxillary incisors.

2. Posterior repositioning of the anteriorly placed mandible.

Because of the absence of the mandibular six-year molars, it was impossible to place one of the conventional appliances for this patient.

On Oct. 1, 1944, a headcap-chin cap assembly was given to this patient, together with a celluloid bite plane and instructions for its use.

On Dec. 19, 1944, the maxillary molar bands with 0.036-inch inside diameter buccal tubes were cemented and a Johnson twin arch with ½-inch coil springs inserted and ligated to the maxillary incisor teeth.

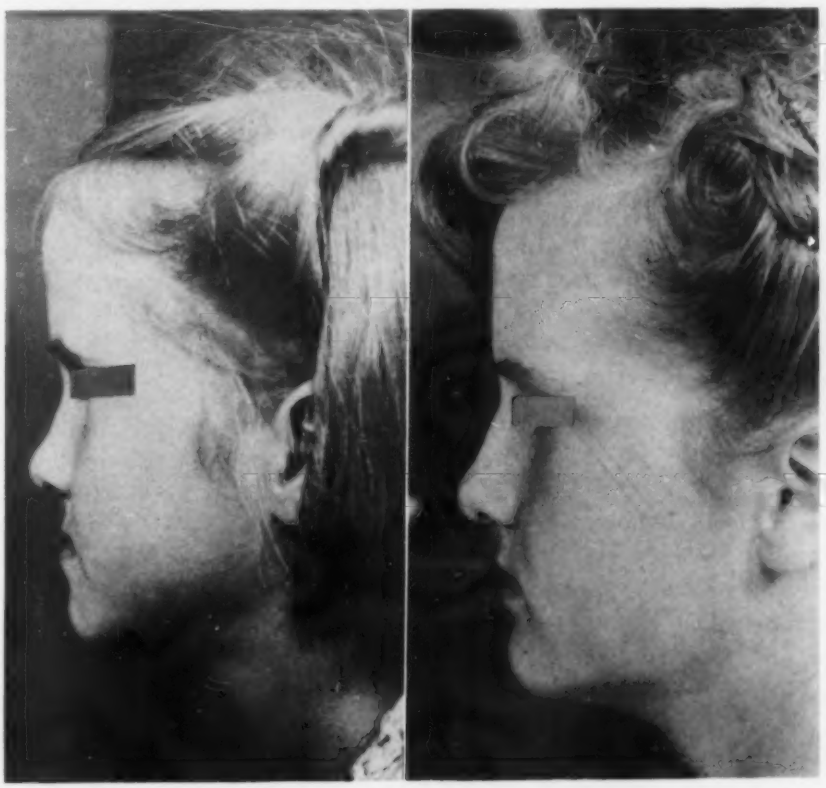

Fig. 4. Fig. 5.

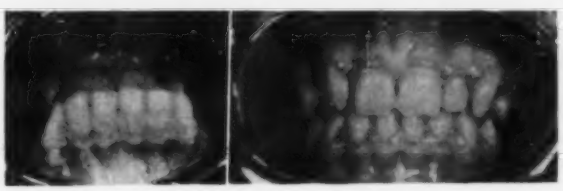

Fig. 6. Fig. 7.

Conscientious use of the celluloid bite plane and chin sling had meanwhile carried the maxillary anterior teeth to an almost edge-to-edge position, and on Dec. 28, 1944, with the use of the Johnson twin arch, the maxillary central incisors were labial to the mandibular incisors. On Jan. 25, 1945, the maxillary left lateral incisor was labial to the mandibular incisors. At this point,

masseter-temporalis muscle exercises were given to the patient for her performance. The Johnson twin arch was removed permanently on Feb. 16, 1945, and the maxillary molar bands were removed approximately two weeks later. Final models and photographs were made on July 31, 1945. Use of the chin sling for retention was continued until March 1, 1946. Treatment appointments were spaced two to three weeks apart, and actual treatment time was from Oct. 1, 1944, to Feb. 16, 1945, or five and one-half months. No secondary treatment was instituted in this case.

On Aug. 5, 1948, new study models, photographs, and x-rays were made. These showed that the mesial drift of the maxillary right lateral half, noted originally, had continued and that the right canine had moved into the space created by the congenital absence of the maxillary right lateral incisor. The new models and photographs revealed the dentofacial improvement following correction and the maintenance of that correction.

Figs. 4 and 6 are before treatment photographs. Figs. 5 and 7 show the patient three years after treatment.

II. *Mandibular Prognathism With Protrusion and Spacing of the Mandibular Incisor Teeth.*—The second patient to be presented is C. H., aged 8 years, 4 months, with a history of good general health and good oral hygiene. Tonsils and adenoids were present and apparently normal.

Clinical examination, photographs, and a study of the models indicated that we were confronted with a case which, if left untreated, would develop into a severe mandibular prognathism. The maxillary arch presented a retrusion of the anterior section, with resulting Angle Class III relationship to the mandibular anterior section. The mandibular arch was quite normal except for the protrusion and spacing of the mandibular incisor teeth. The profile photograph showed typical appearance of mandibular prognathism. Roentgenographic findings were essentially negative.

Search for an etiological factor in this case revealed that the child had developed the habit of placing the mandible in a forward position in imitation of a near relative.

Steps in the plan of treatment were as follows:

1. Correction of the mandibular incisor protrusion.
2. Correction of the maxillary incisor retrusion.
3. Retention.

On May 23, 1946, mandibular molar bands with 0.036-inch inside diameter buccal tubes were cemented, and on May 28, an 0.036-inch stainless steel labial arch wire with 0.025 anterior-interior section was inserted. Figs. 8 and 9 are the before and after intraoral views; note the depth of overbite. Fig. 10 is a photograph showing the stainless steel labial arch wire with anterior-interior section. This was worn nights only in conjunction with a headcap and traction hooks. At this appointment, a celluloid bite plane was given with instructions for its use. On July 26, 1946, the maxillary molar bands were cemented, and the following day a Johnson twin wire with ½-inch coil springs was inserted. No bands were placed upon the maxillary incisor teeth.

The note on the working card indicated that the Johnson twin arch was inserted to retain the corrected labiolingual relationship of the maxillary and mandibular anterior teeth. The Johnson twin wire was removed on Aug. 16, 1946, or exactly three weeks later.

The maxillary and mandibular molar bands were removed on Sept. 3, 1946, and masseter-temporalis muscle exercises were given. Two weeks later, a chin sling consisting of headcap and cloth chin cap was given to the patient to be worn at night as a means of retention. This was worn for about three months. The final photographs were made on Jan. 28, 1947, and final study models on Feb. 15, 1947.

Fig. 8.

Fig. 9.

Fig. 10.

Actual time of treatment in this case extended from May 28, 1946, when the stainless steel labial arch wire was inserted, until Sept. 3, 1946, when the maxillary and mandibular molar bands were removed, or a period of ninety-eight days. No secondary treament was instituted. Examination of the patient on Aug. 13, 1948, revealed that the correction had been maintained.

The conclusions to be drawn from this case are as follows:

1. When spacing of the mandibular anterior teeth is present, it is advisable to use an appliance which will close these spaces and move the mandibular incisors lingually while the maxillary anterior teeth are being carried labially.

2. The celluloid bite plane is an important adjunct to treatment.

3. Early treatment of developing mandibular prognathism insures a much more rapid and satisfactory correction.

III. *Mandibular Prognathism With a Wide Frenum and Spacing of the Maxillary Central Incisors.*—The next case to be presented, which was treated by this method, is M. R., aged 11 years, 3 months, with a history of general

good health. He had had chicken pox at 6 years and measles at 8 years, and his tonsils and adenoids had been removed.

Examination of the patient, his photographs, and a study of the models revealed a typical case of mandibular prognathism.

The maxillary arch, which was in mild contraction, presented a linguoversion of the anterior teeth and separation of the maxillary central incisors. The frenum was low. There was a cross-bite relationship of the molars on the right side due to contraction of the maxillary right molar area. The mandibular arch, which was normal in width, presented a small separation between the central incisors and a slight deviation of the median line toward the right. Molar relationship on both sides was that of a typical mesioversion case, with the mandibular molars being mesial from normal at least the width of a premolar. Roentgenographic findings were negative.

Fig. 11.

Endocrine inheritance is undoubtedly a factor in the production of mandibular prognathism in this case.

The plan of treatment was divided into the following steps:

1. Retrusion of the mandible.
2. Slight expansion of the maxillary lateral halves.
3. Labial movement of the maxillary anterior teeth.
4. Closing of the diastema caused by the low frenum.
5. Observation through transition.

On June 14, 1947, the patient was given a celluloid bite plane with instructions for its use. Nine days later he was given a chin sling. On Aug. 1, 1947, or about forty-eight days later, it was noted that he was making progress, and on Aug. 23, 1947, it was noted that the maxillary anterior teeth were labial to the mandibular anterior teeth.

Fig. 11, taken Oct. 3, 1947, shows the progress of this case before a single band had been cemented and represents the result from the use of the celluloid bite plane and chin sling for eighty-two days.

Final photographs and models of this case were made on May 10, 1948, even though treatment was not complete. Photographs and models showed the results achieved in better maxillary arch form and in the improved facial lines.

Observations and conclusions to be drawn from this case are:

1. Using a chin sling and celluloid bite plane exclusively, the anterior cross-bite was corrected by the patient in eighty-two days.

2. A low, heavy frenum will cause separation between the maxillary central incisors even when confined by the anteriorly placed mandibular teeth.

IV. *Mandibular Prognathism Complicated by Deep Overbite.*—The next case to be presented is K. B., aged 9 years, 2 months, with a history of general good health. Tonsils and adenoids had been removed at the age of 4 years.

Clinical examination and a study of the photographs and models indicated that this child had a mandibular prognathism, even though the lines of the face, as seen in the profile photograph (Fig. 12) were not disturbed. The overbite in this case is so deep that the maxillary incisor teeth are almost hidden from view. The maxillary arch presented a retrusion and rotation of the central incisors. Maxillary incisors were in linguoversion. Premature loss of the deciduous molars had resulted in a mesial migration of the maxillary molars, with probable impaction of the maxillary second premolars. Premature loss of the mandibular deciduous molars may result in the impaction of the mandibular premolars. The mandibular arch, which is normal in width, presents a 3 mm. deviation of the median line toward the left.

The premature loss of the deciduous molars was a factor in the production of mandibular prognathism in this case.

The general plan of treatment was as follows:

1. Correction of the retrusion of maxillary incisors.

2. Slight distal positioning of the mandible during the period of labial movement of the maxillary incisors.

3. Then, treatment of this case as though it were a neutroclusion case.

In order to learn how much time would be required to correct the labiolingual relation of the anterior teeth, this boy had a long appointment, at which time:

1. The maxillary molar bands were cemented.
2. The Johnson twin wire was inserted.
3. The patient was given a celluloid bite plane.
4. The patient was given a chin sling.

The date was Jan. 7, 1947. On March 31, 1947, or eighty-three days later, the anterior correction was at least partially complete and impressions for study models and a photograph showing progress were made. Figs. 12 and 13 are the before treatment photographs. Fig. 14 was made eighty-three days after the beginning of treatment.

Further treatment will be carried out upon the basis of a classification of neutroclusion.

Observation and conclusions follow:

1. The time study in this case indicates that the chin sling and flexible bite plane provided a simple, rapid method for the correction of anterior crossbite.

2. After the mandibular prognathism has been corrected, the case is reclassified as a neutroclusion case and treated accordingly. However, the deep overbite should not be disturbed.

3. This case, with its undisturbed facial lines, should be classified as a maxillary retrognathism with pseudomandibular prognathism.

Fig. 12.

Fig. 13.

Fig. 14.

V. *Mandibular Prognathism Complicated by Deep Overbite and Malalignment of the Maxillary Anterior Teeth.*—The next patient to be presented is C. W., aged 12 years, 7 months, with a history of good general health. Tonsils and adenoids had been removed. The child had had measles and mumps at the age of 4 years.

Clinical examination and study of the models and photographs indicated that we were confronted with an established mandibular prognathism. The age of the patient and the depth of the anterior overbite seemed to suggest that this would be a difficult case to correct.

The maxillary arch, which was in a state of contraction, presented a malalignment of the anterior section. There was a 2 mm. deviation of the median line toward the left and linguoversion of the maxillary left lateral incisor. Maxillary right and left six-year molars had been lost through extraction, and the twelve-year molars had drifted forward and rotated. There had been an arrested development of the maxillary anterior section. The mandibular arch, which was fairly normal in other respects, was in a prognathous position. Roentgenographic examination was essentially negative.

Fig. 15.

Fig. 16.

The etiological factor in the production of mandibular prognathism in this case was the premature loss of the maxillary right and left six-year molars.

Steps in the plan of treatment were as follows:

1. Retrusion of the mandible.
2. Labial movement of the maxillary anterior teeth, with correction of the linguoversion of the maxillary left lateral incisor.

On Dec. 26, 1947, the patient was given a chin sling and celluloid bite plane with instructions for their use. On Jan. 30, 1948, the maxillary molar bands were cemented and the Johnson twin wire was inserted a few days later.

The maxillary right molar band was re-cemented April 9 and a new Johnson twin arch was inserted April 10.

On May 13, the maxillary anterior correction had been made with the exception of the left lateral incisor. Because this tooth had been in linguoversion, it had moved labially just enough to bite edge-to-edge and to prevent a proper settling of the overbite. Progress to this point had required approximately five months of treatment.

Although the Johnson twin wire was discontinued at this time, the patient continued the use of the chin sling and celluloid bite plane.

The progress photographs were made on Oct. 18, 1948. Fig. 15 shows the before treatment photograph. Fig. 16 shows the after treatment photograph.

Observations and conclusions follow:

1. The normal interaction of the labial and lingual planes of the teeth in the anterior segment of each arch cannot take place until the retrusion and rotation of the maxillary left lateral incisor have been corrected.

2. The proper positioning of the retruded maxillary left lateral incisor will be more time-consuming than the correction of the major anomaly.

3. Patient cooperation in this case was remarkable and accounts in great part for the results achieved.

VI. *Mandibular Prognathism Complicated by Unilateral Cross-bite.*—The next patient to be presented is P. K., aged 15 years, 5 months, with a history of general good health and good oral hygiene. She had had measles at the age of 4 years, and mumps and chicken pox at 5 years. Tonsils and adenoids had been removed. The caries index was high. Roentgenographic examination showed a radiolucent area above the maxillary left lateral incisor.

Clinical examination and a study of the models and the photographs indicated that we were confronted with an Angle Class III subdivision, or a mesioversion case with cross-bite on the right side. The profile photograph was indicative of the dentofacial deformity present. In this case, the deformity was essentially dental rather than mandibular. The maxillary arch presented a malalignment of the anterior section, with the right central and lateral incisors and the left lateral incisor in linguoversion. The left central incisor overlapped the right, and there was a 1 mm. deviation of the median line toward the right. The maxillary right and left six-year molars had been lost through extraction. The mandibular right central incisor, lateral incisor, and canine were in slight protrusion. The mandibular right lateral half presented some mesial migration, with the first premolar in linguoversion and the second premolar and six-year molar in distraction. Contraction of the maxillary arch in the right premolar area had resulted in a cross-bite on this side.

In this case, mandibular prognathism was produced by extrinsic and intrinsic factors operating together: hereditary influence plus the early loss of the maxillary six-year molars.

The steps in treatment may be summarized as follows:

1. Alignment of the maxillary anterior section in a labial position.
2. Retrusion of the mandibular anterior section.
3. Correction of the cross-bite on the right side.

On Nov. 16, 1945, maxillary molar bands were cemented, and a lingual arch wire and a Johnson twin arch wire were inserted. On Dec. 10, 1945, the mandibular molar bands were cemented. These had double buccal molar sheaths with 0.036-inch inside diameter tubes soldered over them. On Jan. 17, 1946, a stainless steel labial arch wire was activated by traction hooks sewed to the headcap and worn at night only, in accordance with Oppenheim's[12] principles of intermittent pressure.

The mandibular right canine and second premolar were also banded and carried universal brackets. The mandibular right first premolar was removed to make possible a shortening of the arch on the right side. This compromise was made for several reasons. Segmental therapy was instituted in which the right molar and second premolar were pitted against the canine. The canine was also being moved distally and lingually by the anterior-interior section of the mandibular labial arch wire. Later, an 0.030-inch auxiliary spring was added to the mandibular arch wire on the right side. This and the auxiliary spring which carried the maxillary premolars buccally corrected the crossbite on the right side. The space left by the removal of the first premolar was almost closed, and would have been closed completely by a longer period of treatment. By Nov. 19, 1947, all bands had been removed and final impressions for study models were taken. Photographs and radiographs were made. Masseter-temporalis exercises were given. No secondary treatment was given because the patient was about to leave home to enter upon a course in nursing.

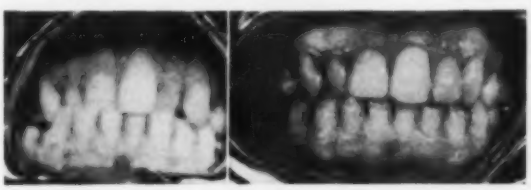

Fig. 17. Fig. 18.

Results achieved were a correction of the anterior and unilateral crossbite with dentofacial improvement.

From observation it seems that an auxiliary spring added to the removable mandibular labial arch-wire is a useful adjunct to occipital anchorage in the correction of crossbite.

Fig. 17 shows the before treatment photograph; and Fig. 18 shows the after treatment photograph.

VII. *Cleft Palate Case With Mandibular Incisor Spacing and Protrusion Treated as a Mandibular Prognathism With a Similar Condition.*—Cleft palate cases, properly speaking, cannot be classified with cases of mandibular prognathism, even though there is a great deal of similarity in appearance. Cleft palate cases belong in the maxillary retrognathous classification. Because of the failure of development of the premaxilla and because of the side effects of surgical repair of the harelip, there is usually a deficiency of labial

growth in the premaxilla. The mandible appears to be in a prognathous position even though its position may be perfectly normal. In some of these cases, it is necessary to make the "normal conform to the abnormal." This means retruding the anterior section of the mandibular arch, with or without the removal of dental units. In other cases, the abnormal action of the tongue

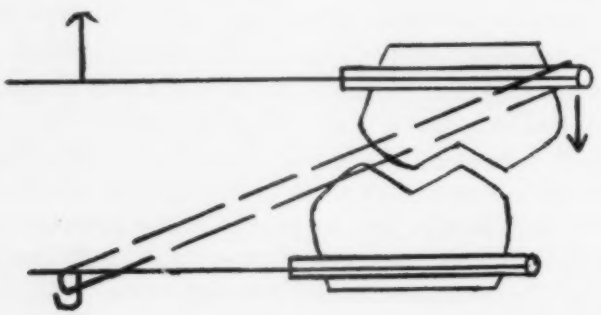

Fig. 19.

Fig. 20.

Fig. 21.

may cause separation and flare of the mandibular anterior teeth. In either case, the retrusion of the teeth in the mandibular anterior section by means of Class III elastics is contraindicated. Neither the premaxilla nor the teeth in the premaxilla can withstand the upward depressing action which results from the use of Class III elastic force.

It is preferable to use an appliance which will provide a horizontal lingual pull for the retrusion of the mandibular anterior section. Only the headcap used in conjunction with traction hooks or another source of power can provide this type of pull. The mandibular appliance used is a labial arch wire with anterior-interior section and hooks to engage the traction hooks.

Without entering into a discussion of the treatment of cleft palate cases, and limiting this discussion to the retrusion of the mandibular incisor teeth, the following progress photographs are presented.

Fig. 20 shows the original photograph. Fig. 21 shows the progress of the case with the mandibular appliance in position.

Mandibular molar bands were cemented Feb. 19, 1948, and the second photograph was made six months later, on August 17. These photographs showed the progress of this case without the use of intermaxillary elastics. With this type of treatment the danger of producing an open-bite has been minimized.

VIII. *Mandibular Prognathism With Bilateral Cross-bite and Impaction of the Maxillary Canines.*—The final case to be presented is M. T., aged 14 years, with a history of good general health and good oral hygiene. Tonsils and adenoids had ben removed. Clinical examination and a study of the models and photographs indicated that this was a case of mandibular prognathism complicated by maxillary micrognathia and impacted maxillary canines.

The maxillary arch, which was in general contraction, presented a retrusion and malalignment of the anterior section. The mandibular arch, which was normal in width, was in a prognathous position. Roentgenographic examination showed a tendency toward impaction of the mandibular third molars and impaction of the maxillary canines.

The probable etiological factor in this case was the developmental arrest of the maxillary arch.

Steps in the plan of treatment were as follows:

1. General expansion of the maxillary arch:
   a. Lateral development for the correction of the bilateral cross-bite.
   b. Anterior development with relief of the impacted canines as one of the objectives.
2. Retrusion of the mandible and the mandibular denture.
3. Orbicularis oris and masseter-temporalis exercises.
4. Retention.

On June 29, 1945, the patient was given a chin sling to be worn at night and a celluloid bite plane to be used for thirty minutes each day. During July and August, the maxillary anterior bands were made and cemented. On Nov. 10, 1945, the maxillary lingual arch wire and the Johnson twin arch wire were inserted. This is one of the cases in which bands were placed upon the maxillary anterior teeth. This was done because of the impacted maxillary canines and the probability of a long period of treatment.

On Jan. 29, 1946, the chin cap was discontinued and a mandibular stainless steel labial arch wire with anterior-interior section was inserted. The

patient was given a headcap with traction hooks to be worn at night.

On March 1, 1946, there was a note on my working record stating that the maxillary left central incisor was labial to the mandibular incisors. Since there were no other notes regarding the dates upon which the other maxillary anterior anterior teeth were labial to the mandibular, I presume that it was shortly afterward.

On Oct. 24, 1946, the mandibular twelve-year molars were removed. Coils, 0.011 inch, were added to the mandibular labial arch wire for distal movement of the mandibular buccal segments.

Fig. 22.

Fig. 23.

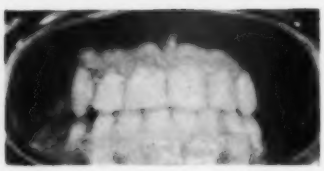

Fig. 24.

On Feb. 4, 1947, progress models were made which showed correction of the cross-bite on the left side and partial correction of the cross-bite on the right side, with the maxillary right canine almost in its correct position and almost sufficient space for the eruption of the maxillary left canine. The maxillary incisors were in their correct labiolingual relation with the mandibular incisors. Length of treatment up to this point was twenty months.

The mandibular stainless steel labial arch wire was discontinued on Sept. 8, 1947, and the maxillary Johnson twin wire on Oct. 20, 1947.

The maxillary left canine, which had erupted lingually, and in rotation, was carried labially by an auxiliary spring soldered to the maxillary lingual arch wire.

On Sept. 25, 1948, the patient was given a Hawley retainer to maintain lateral width. The final photographs were made on Sept. 20, 1948, and show the intraoral and extraoral change brought about by treatment. Fig. 22 shows the before treatment photograph. Figs. 23 and 24 show the after treatment photographs.

The total treatment time extended from June 29, 1945, until Sept. 20, 1948, or three years and three months.

Observations and conclusions follow:

1. The retruded position of the pronasion is apparent in the profile photographs and is due to the deficiency in the maxillary apical base.

2. In those cases in which genetic factors operate to produce a microdevelopment of the maxillary arch, prudence dictates the use of an appliance which controls root movement to only a limited extent.

CONCLUSION

A method for the correction of mandibular prognathism has been presented. Employing a chin sling and celluloid bite plane, correction of the labiolingual relationship of the anterior section of the dental arches is both simple and rapid. In special cases in which there is a protrusion of the mandibular anterior teeth, occipital anchorage is used in conjunction with a mandibular labial arch wire and anterior-interior section to reduce the protrusion. The latter method is employed for similar conditions in cleft palate cases and in cases of mandibular prognathism complicated by impactions in the maxillary arch where the use of Class III intermaxillary elastics is contraindicated.

In uncomplicated cases, correction of mandibular prognathism is made without the use of any bands whatsoever. In older children, a Johnson twin wire is used for the maxillary arch to carry the anterior teeth labially during the period when the teeth are in almost edge-to-edge position. Bracket bands are not used because they prevent the maxillary anterior teeth from settling as rapidly, as completely, and with the production of as deep an overbite as occurs when no bracket bands are used.

In the etiology of mandibular prognathism, it would appear that the role of enlarged tonsils has been overemphasized. Actually, the bilateral loss of the deciduous or permanent molars is a more important factor in the production of mandibular prognathism than has been generally recognized. Similarly, a microdevelopment of the maxillary arch will result in a mandibular prognathism. In the former case, extrinsic factors operate to produce the mandibular prognathism. In the latter case, the maxillary micrognathia and resultant mandibular prognathism must be ascribed to genetic influence.

The term mandibular prognathism is a broad classification which requires differentiation to be more effective. Attention is focused upon the position of the mandible, but the maxillary deficiency, which in many cases is the determining factor, is left unmentioned.

Since a classification is intended to convey a clear picture of the anomaly, it would seem that the term mandibular prognathism should be qualified by a description of the accompanying partial or general maxillary micrognathia or by some mention of its variation. In addition, a distinction should be made in those cases which belong in the classification of maxillary retrognathism.

Diagnosis should do more than establish classification. It should provide so complete a description of the anomaly that correct therapeutic procedure will follow naturally.

REFERENCES

1. Rubbrecht, O.: Heredity of Anomalies of Jaws, Am. J. Orthodontics and Oral Surg. **25**: 752, 1939.
2. Strang, Robert H. W.: A Text-Book of Orthodontia, Philadelphia, 1943, Lea & Febiger, p. 510.
3. Angle, Edward H.: Malocclusion of the Teeth, ed. 7, Philadelphia, 1907, The S. S. White Dental Mfg. Co., p. 58.
4. Silver, E. I.: Forsythe Orthodontic Survey of Untreated Cases, Am. J. Orthodontics and Oral Surg. **30**: 654, 1944.
5. Angle, E. H.: Malocclusion of the Teeth, ed. 7, Philadelphia, 1907, The S. S. White Dental Mfg. Co., p. 550.
6. Brash, J. C.: The Aetiology of Irregularity and Malocclusion of the Teeth, London, 1930, Dental Board of the United Kingdom, p. 245.
7. Brash, J. C.: The Aetiology of Irregularity and Malocclusion of the Teeth, London, 1930, Dental Board of the United Kingdom, p. 103.
8. Rubbrecht, O.: A Study of the Heredity of the Anomalies of the Jaws, Am. J. Orthodontics and Oral Surg. **25**: 765, 1939.
9. Johnson, A. LeRoy: Studies in Genetics of Interest to the Orthodontist, Int. J. Orthodontia **19**: 277-279, 1933.
10. Seltzer, Carl C.: Personal communication; Anthropologist to the Grant Study, and Research Fellow in Physical Anthropology, Harvard University.
11. Johnson, A. LeRoy: The Constitutional Factor in Skull Form and Dental Occlusion, Am. J. Orthodontics and Oral Surg. **26**: 661, 1940.
12. Oppenheim, Albin A.: A Possibility for Physiologic Orthodontic Movement, Am. J. Orthodontics and Oral Surg. **30**: 316, 1944.

316 High Street.

MINIMIZING THE NEED FOR MECHANIZED ORTHODONTIC THERAPY

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ALFRED PAUL ROGERS'[1] work in simplifying orthodontic treatment by the development of myofunctional methods is a monumental pioneering achievement which impressed me more than thirty years ago. A few of its principles have been utilized in the treatment of five cases that I shall present in this report.

CASE REPORTS

Case 1.—An interesting case of acquired anomaly of the deciduous dentition and its correction is that of a little girl aged 2 years, 5 months at the time she came to me. She was the youngest of four girls of a rural family. The life history of the child as related by the parents was briefly this: They could not recall that at birth there had been any deficiency in the size or position of the mandible. In fact, she was a round-faced infant of much the same type her three sisters had been. The changed facial outline had developed as she grew, and by the time she was 2 years old she did not bear a family resemblance. Because the mother's physical condition prohibited her nursing the child, the baby was fed by the bottle method. Raw cow's milk, with possibly some modification during her early months, had been her only nourishment. She refused supplementary food of any kind and, unlike her sisters, refused to drink from a cup at a time when weaning should have taken place. Because she was a weak child, the family physician advised a continuation of bottle feeding rather than oppose the child. The thumb- or finger-sucking habit was not a contributing factor in the abnormality of dental arch form in this particular case, but the child did persistently use the nursing bottle nipple as a pacifier (Fig. 1).

When I was assured by the parents that the child was not at that time under the care of a physician, my advice to them was to discard the nursing bottle immediately, to provide a separate dining table for the children, including the patient, and to pay no attention to her objections to such an arrangement. When she became hungry enough, she would eat and drink like her older sisters.

In the study made of this child's case, I attribute the result obtained to the correction of dietary habits. The change in diet necessitated dental function and a normal functioning of the muscles of deglutition. All this aided

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in the response to underlying forces of growth. Furthermore, in keeping with the changes that occurred in dental arch form and occlusion, the facial outline bore a close resemblance to that of her sisters.

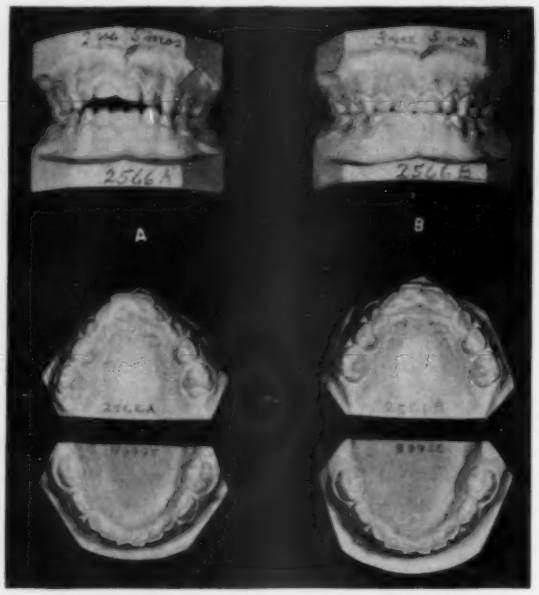

Fig. 1.—Case 1. *A*, Occluded aspect of record casts showing acquired anomaly of deciduous dentition in the case of a little girl aged 2 years, 5 months. *B*, Record casts of the same case made one year later, showing the result obtained through a correction of dietary habits, enforcing normal dental function, and development of the muscles of deglutition.

Case 2.—In Fig. 2 are shown record casts in the case of a girl aged 8 years, 7 months at the time record casts *A* were made. The anomaly of dentition was a maternal characteristic and similar to that found in the mouths of older children in the family.

In the treatment of this girl's case, mechanized treatment was applied to the lower dental arch only. By that means of treatment the lower dental arch was developed sufficiently to establish alignment of the incisor teeth. Basing my judgment upon past years of experience in the treatment of similar cases, I considered it quite within reason to depend upon the myofunctional method in developing the upper dental arch while the lower appliance was in operation. The girl was instructed in exercising the muscles of mastication and deglutition at stated intervals, mealtimes being selected. Before eating, with the teeth in centric occlusion but not clenched, the muscles of mastication were quietly and slowly flexed seven times. In eating, all food that required chewing was to be masticated until the bolus could be readily swallowed. When a drink was taken, the patient was instructed to sip it, not to pour it down. In the proper exercise of this method of eating and drinking, the muscular force of the tongue acts beneficially upon all areas of the dental arches and also strengthens the muscles of deglutition.

A comparison of record casts *A* and *B* shows the result obtained by a

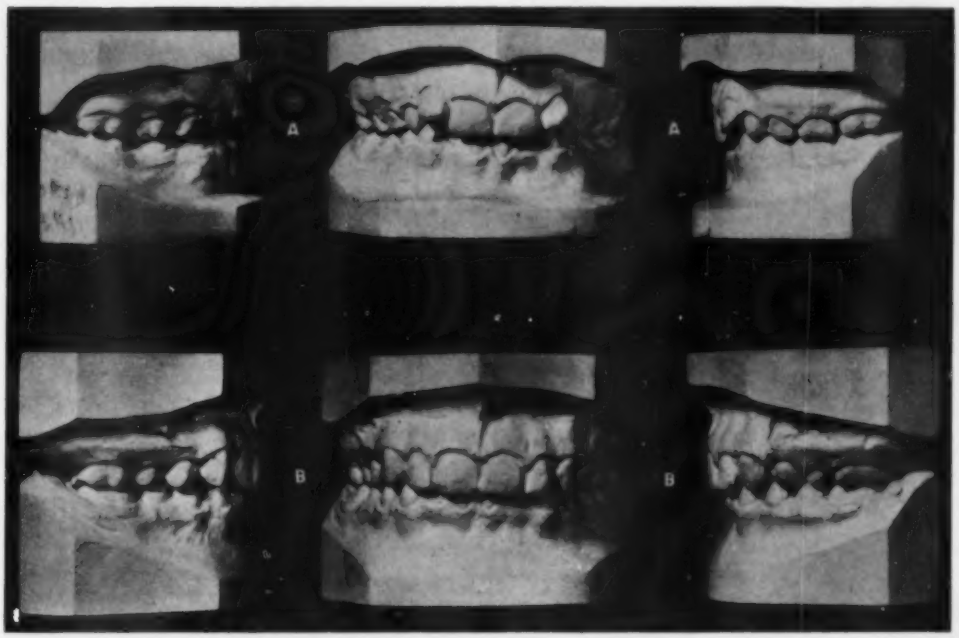

Fig. 2.—Case 2. *A*, Classification, neutroclusion. Girl aged 8 years, 7 months. Mechanized therapy applied to lower dental arch only. *B*, Record casts showing the result of treatment obtained up to the age of 11 years, 1 month.

Fig. 3.—Case 2. Occlusal aspect of the record casts shown in Fig. 2.

combination of mechanized therapy and myofunctional therapy between the ages of 8 years, 7 months and 11 years, 1 month.

The lower deciduous molars and lower deciduous canines served as bases for cemented anchorages that stabilized working parts of the appliances. Mechanized therapy was discontinued when the lower first deciduous molars and lower deciduous canines were cast off. Fig. 3 shows the occlusal aspect of the record casts *A* made just before starting treatment, and record casts *B* made when the premolars and permanent canines erupted and occluded normally.

CASE 3.—Fig. 4. I shall now present a case that I classified as neutroclusion. It is the case of a thriftily growing girl aged 11 years, 3 months at the time of introduction when record casts *A* were made (Fig. 4). She did not have a single blemish in her physique other than the anomaly of dentition. I planned mechanized treatment for the upper dental arch *only,* which properly positioned the impacted upper right canine and right lateral incisor. This same mechanized operation carried the upper anterior teeth labially enough to allow an unrestricted opportunity for potential mandibular growth processes to become active.

Fig. 4.—Case 3. Classification, neutroclusion. Girl aged 11 years, 3 months. *B*, Record casts made one year, seven months later showing the result obtained up to that time. Mechanized treatment applied to upper dental arch only.

Record casts *B* that were made approximately one year, seven months later show the result obtained through combining the two methods of orthodontic therapy. It will be observed that during the treatment, normal intercuspal relationship of the premolars was established. Fig. 5 shows the occlusal aspect of the record casts *A* and *B* that are shown in Fig. 4.

CASE 4.—In the study I made of this boy who came under my care for orthodontic treatment at the age of 11 years, I decided that, regardless of a

marked tendency to a bilateral distal relationship of the buccal segments, both methods of therapy should be employed. The mechanized method was applied in developing the upper dental arch, and myofunctional therapy was depended upon to stimulate the mandibular growth processes.

Record casts *B* that were made one year, five months later than record casts *A* show the result obtained up to the age of 12 years, 5 months (Fig. 6). It will be observed that the buccal segments are now in normal occlusal relationship. Fig. 7 shows the occlusal aspect of the record casts and dimensional change that took place during active and passive treatment. The case has not been dismissed.

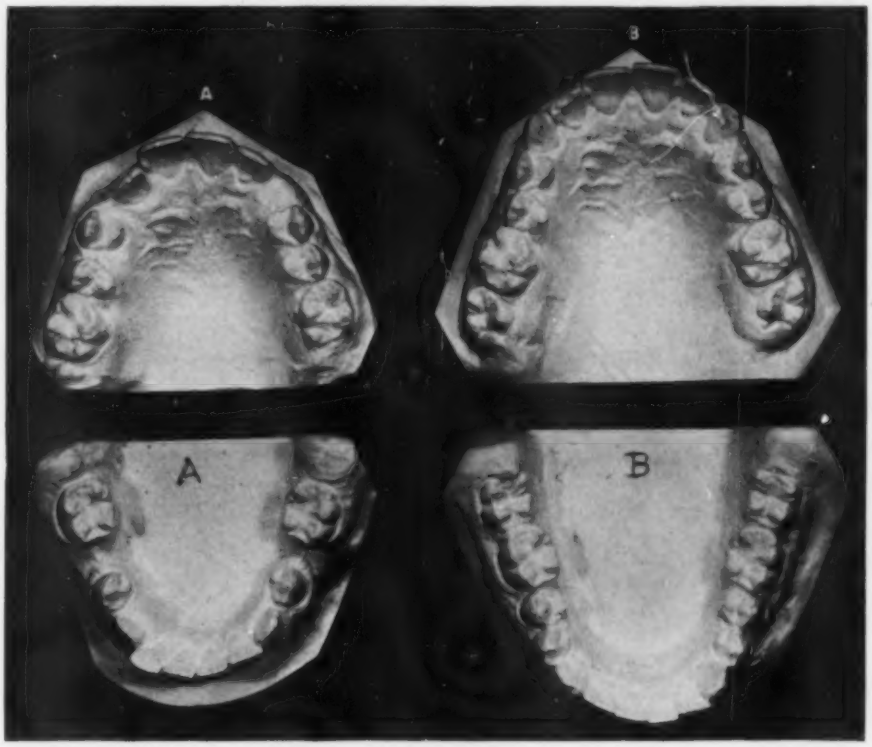

Fig. 5.—Case 3. Occlusal aspect of the record casts shown in Fig. 4.

CASE 5.—The last case, but by no means of least importance, that I shall show is that of a girl who was 10 years, 11 months of age at the time of introduction. Except for the existing anomaly of dentition, this girl's physique was all that could be expected for a girl of her age. The disturbing factor that affected denture growth most appeared to have been primarily due to an ectopic eruption of the upper right lateral incisor that had caused an early loss of the deciduous canine and diminished space for the permanent one. The upper right buccal segment had migrated forward and the incisors had shared in the loss of canine space through upper lip compression. In fact, the entire dental system had been demoralized by the ectopic eruption of the upper right lateral incisor.

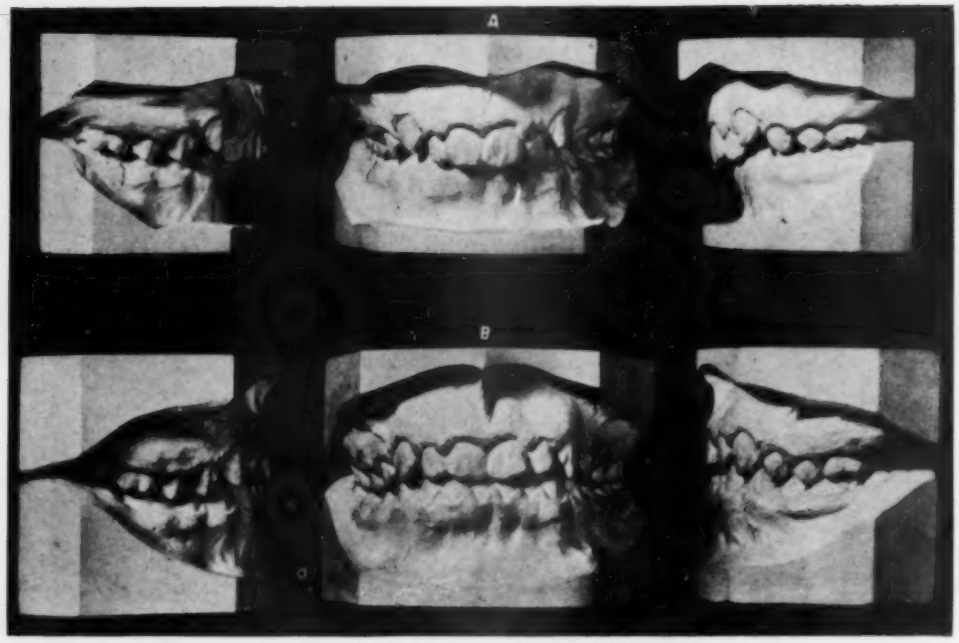

Fig. 6.—Case 4. *A*, Classification is questionable. Boy aged 11 years. Mechanized treatment applied to upper dental arch only. *B*, Record casts made one year, five months later, showing the result of treatment obtained up to that time.

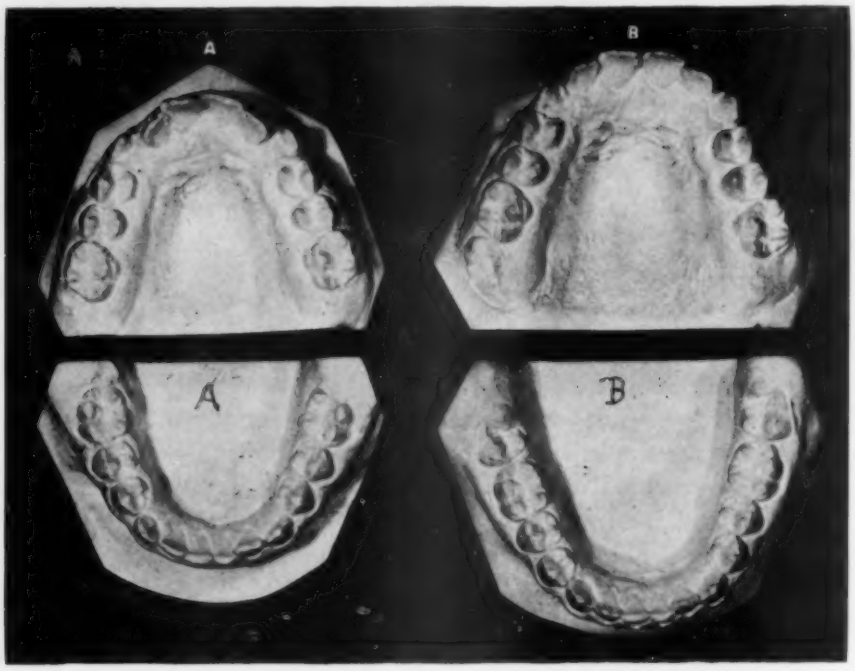

Fig. 7.—Case 4. Occlusal aspect of the record casts shown in Fig. 6.

In the preliminary treatment of this girl's case, the lower right first deciduous molar and the upper left deciduous canine were extracted. When the permanent successors to those two deciduous teeth erupted, the four upper and lower second deciduous molars were extracted. At this time the girl was instructed in exercising the muscles of mastication and deglutition in the same way as previously given for Case 2.

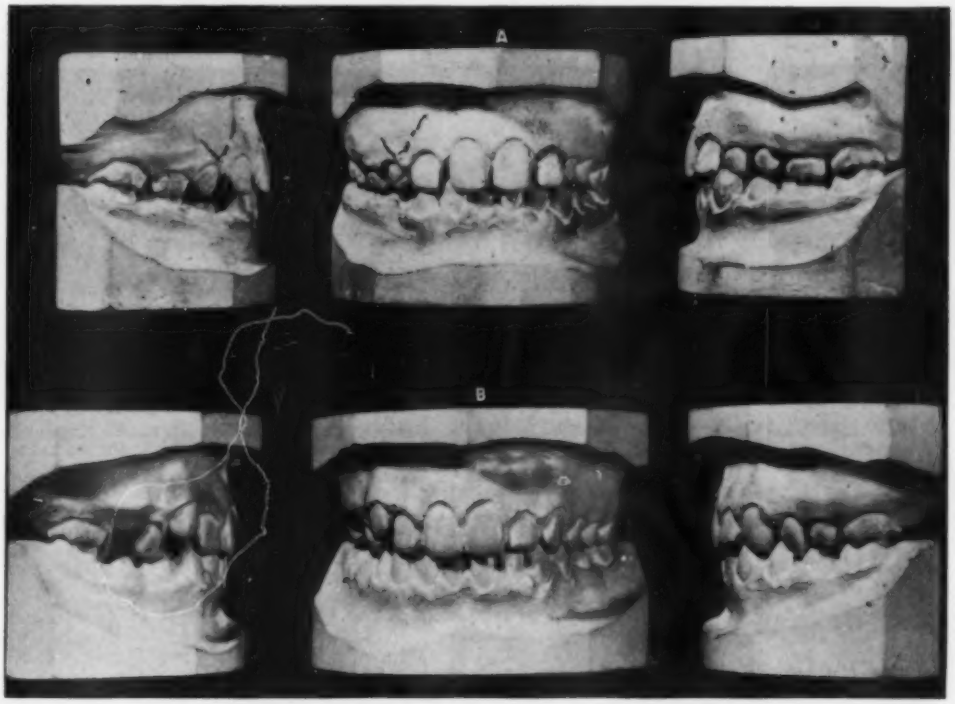

Fig. 8.—Case 5. This is the first illustration in a series of four that show the progressive changes in dentition that took place in the case of a girl between the ages of 10 years, 11 months and 15 years, 9 months. Record casts *A* and *B* show the progress of dentition during the first ten months of supervision.

In addition to the myofunctional method that was to be employed in the treatment of this case, a heavy elastic rubber band, commonly used to hold a packet of documents together, was used as an aid in reducing the dental anomaly. The girl was instructed to clench one end of the elastic band between the buccal segments on the right side, first in the premolar area and then in the canine area. At the same time, with the right hand she was to stretch the elastic rubber band outward eight times morning, noon, and night.

Record casts *A* show the state of dentition at the beginning of treatment and record casts *B* made ten months later show the general development of dentition that took place during that period of treatment (Fig. 8). Record casts *C* made five months later show that additional space for the upper right permanent canine had developed, the upper and lower first premolars were intercusping normally, and the upper right second premolar was erupting (Fig. 9). Record casts *D* made eleven months later again show the normality of dentition

that was developing through the prescribed home treatment. Here the upper and lower right first molars are in normal occlusion (Fig. 10). The treatment was then continued for twenty months until the second molars had erupted in normal relationship. Record casts *E* were then made that show the final result of the treatment (Fig. 11). The girl had attained the age of 15 years, 9 months and still possessed an unusually good physique.

In my account of this case no mention was made of a mechanized treatment appliance being attached to the teeth. None was used.

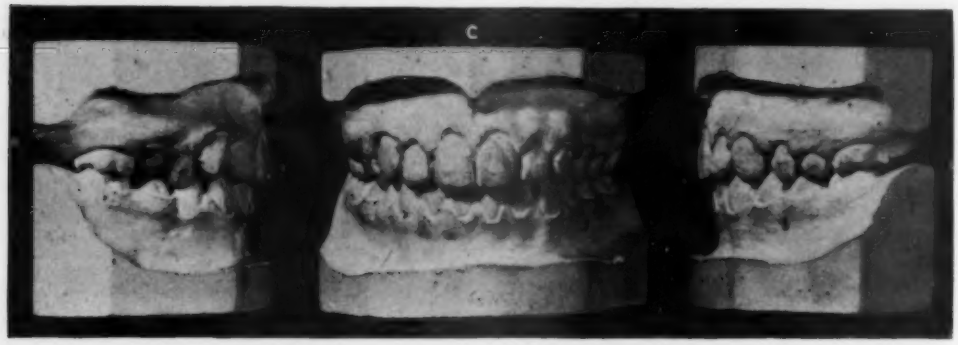

Fig. 9.—Case 5. Record casts *C* made five months later than record casts *B*, shown in Fig. 8, show that additional space is developing for the upper right permanent canine and that the right upper and lower second premolars are erupting.

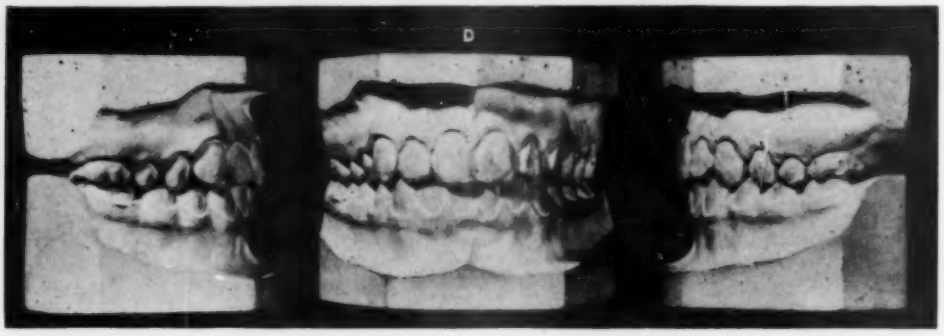

Fig. 10.—Case 5. Record casts *D* made eleven months later than record casts *C*, shown in Fig. 9, show that occlusal relationship of the canines, premolars, and first permanent molars is improving.

Fig. 11.—Case 5. Record casts *E* were made at the age of 15 years, 9 months, twenty months later than record casts *D*, shown in Fig. 10.

The keynote of success in utilizing the myofunctional methods depends entirely upon the patient's faithful cooperation.

In conclusion, to substantiate further my fellow orthodontists' justification for a thoughtful consideration of myofunctional methods, I shall quote scientific authorities who gave serious consideration to the laws of nature.

The first, Milo Hellman,[2] orthodontist and anthropologist, stated, "In all orthodontic measures there is some injury to the roots of the teeth, to the tissues within, and to those surrounding them caused by traumatic effects of orthodontic appliances."

John M. Tyler,[3] an observant scientist of this century, when Professor Emeritus of Biology of Amherst College, in substance said this in discussing man and nature: "Work with nature and she works wonders, cross her and she becomes a hyper-calvinist; nature sets the test, lays down the rules, assigns the marks, awards the prize, and there seems to be no appeal."

REFERENCES

1. Rogers, Alfred Paul: Muscle Training and Its Relation to Orthodontia, INT. J. ORTHODONTIA **4**: 555-557, 1918.
Teaching Our Patients to Overcome Undesirable Muscular Habits, Dental Items Interest **41**: 528-535, 1919.
Stimulating Arch Development by the Exercise of the Masseter-Temporal Group of Muscles, INT. J. ORTHODONTIA **8**: 600-601, 1922 (Abstract). Complete article in Tr. Am. Soc. Orthodontists, pp. 189-191, 1921.
Making Facial Muscles Our Allies in Treatment and Retention, Dental Cosmos **64**: 711-730, 1922.
Co-ordinating Natural and Artificial Methods of Treatment, INT. J. ORTHODONTIA **10**: 63-84, 1924.
Simplifying Orthodontic Treatment, Tr. Am. Soc. Orthodontists, pp. 88-100, 1925; INT. J. ORTHODONTIA **12**: 540-552, 1926.
Behavior of the Temporomandibular Joint in Response to Myofunctional Treatment of Distoclusion, INT. J. ORTHODONTIA **21**: 426-438, 1935.
Evolution, Development and Application of Myofunctional Therapy in Orthodontics, AM. J. ORTHODONTICS AND ORAL SURG. **26**: 1131-1137, 1940.
Helpful Point of View, Tr. Am. Soc. Orthodontists, pp. 178-180, 1929; also INT. J. ORTHODONTIA **16**: 254-256, 1930.
Increased Function in the Treatment of Dental Anomalies, D. Record **48**: 57-69, 1928; also INT. J. ORTHODONTIA **15**: 731-745, 1929.
Living Orthodontic Appliances (Exercises), INT. J. ORTHODONTIA **15**: 1-27, 1929.
Mechanical Orthodontics, AM. J. ORTHODONTICS AND ORAL SURG. **29**: 101-106, 1943.
Newer Orthodontic Concept, D. J. Australia **13**: 153-159, 1941.
Nonmechanical Treatment of Dento-facial Deformities, J. Am. Dent. A. **15**: 290-294, 1928.
Orthodontic Failure, INT. J. ORTHODONTIA **22**: 335-337, 1936.
Orthodontics, AM. J. ORTHODONTICS AND ORAL SURG. **25**: 1003-1005, 1938.
Physiologic Exercises as Applied to Orthodontics, INT. J. ORTHODONTIA **18**: 43-46, 1932.
Place of Myofunctional Treatment in the Correction of Malocclusion, J. Am. Dent. A. **22**: 66-78, 1936.
Problems of the Dual Bite With Particular Reference to the Temporomandibular Articulation, INT. J. ORTHODONTIA **21**: 40-49, 1935.
Treatment and Retention of Mesioclusion Simplified, INT. J. ORTHODONTIA **13**: 1058, 1927.
Trend of Orthodontic Thought, New Zealand D. J. **39**: 243-244, 1943.
2. Hellman, Milo: Some Problems in Orthodontia the Dentist Should Know About, D. Outlook **25**: 236-254, 1938.
3. Tyler, John M.: The Coming of Man, Boston, 1923, Marshall Jones Co., p. 88.

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SELLA TURCICA-NASION DEPTH AND MANDIBULAR BODY LENGTH IN RELATION TO HEAD CIRCUMFERENCE AND HEAD LENGTH

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PURPOSE

THE general purpose of this study was to investigate the relationship between selected dimensions of the calvaria and face. Specific aims of the study were formulated gradually. Ultimately these were stated as follows: To obtain, on children 5 years of age, tables and statistical coefficients representing the degree of association between (1) head circumference and mandibular basal bone length, (2) head circumference and sella turcica-nasion depth, (3) head length and mandibular basal bone length, and (4) head length and sella turcica-nasion depth.

SUBJECTS

The subjects utilized in this investigation were 100 white children 5 years of age. Forty-six were males and 54 females. They were all enrolled in the facial growth study,* and resided in or near Iowa City. Participation in this study is on a voluntary basis and is unrelated to the dental or orthodontic needs of the subject. Case histories show the parents to be about 95 per cent of North European ancestry, and of above average socio-economic status (belonging to the professorial, managerial, commercial, or skilled trade groups).

METHODOLOGY

The following materials, always obtained within three days of the child's fifth birthday, were drawn from the study files:

1. Standardized profile roentgenograms.
2. Direct measurements of head length and head circumference.
3. Ratings of the dentofacial condition.

From each standardized profile roentgenogram,[1] tracings on K88 transparent cellophane were made of the sella turcica, the frontal and nasal bones (particularly their point of junction), the posterior border of the ramus of the mandible, the inferior border of the mandible, and the menton. When two images appeared in a roentgenogram, the most distal image of the ramus and the most superior of the inferior borders of the mandible were traced.[2] When one image appeared completely within the other, the smaller of the two images was traced.

After making the tracings just described, two measurements were taken in the following manner: On the bottom half of an 8 by 10 by 0.0075 Eastman

*A long-term research program begun in the spring of 1946, under the sponsorship of the College of Dentistry and the Iowa Child Welfare Research Station, University of Iowa. The study is directed jointly by Dr. L. Bodine Higley and Dr. Howard V. Meredith.

acetate sheet, mat finish, 2 parallel lines were drawn 5 mm. apart, and a third line was drawn at right angles to and intersecting the parallel lines at one end. The sheet was then placed over a tracing, the lower of the two parallel lines being placed tangent to the inferior border of the mandible and the perpendicular line tangent to the menton. The higher of the two parallel lines was thus positioned 5 mm. above the mandibular base line, on mandibular basal bone. The distance between the perpendicular line tangent to the menton and the posterior border of the ramus along the line through the basal bone of the mandible was measured and recorded. (Fig. 1.) Measurements taken along this line on the one hand avoid measuring alveolar bone, and on the other hand avoid some of the variability in the curvature of the angle of the mandible.

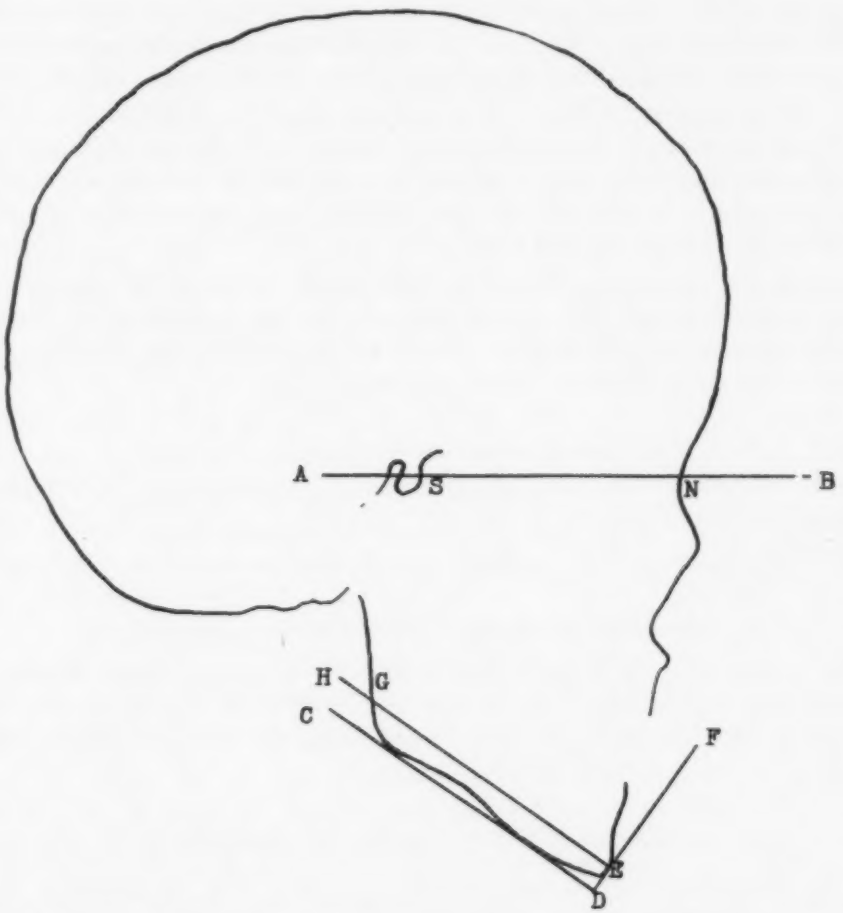

Fig. 1.—Diagram illustrating how the roentgenographic measurements were taken. *N*, Nasion; *S*, sella turcica; *AB*, line used for the measurement of sella turcica-nasion depth; *SN*, sella turcica-nasion depth; *CDF*, lines used for positioning *EH* in mandibular basal bone; *EG*, mandibular basal bone length.

On the top half of the acetate sheet a line 10 cm. long was drawn, and a measurement on each tracing made from the point of junction of the frontal and nasal bones to the most anterior point on the anterior border of the sella

turcica (Fig. 1). This distance was regarded as the sella turcica-nasion depth—a measurement of the length of the roof of the nasal cavity.[3]

The cellophane tracings were checked for accuracy by drawing 10 of the films at random from the 100 profile roentgenograms, and again tracing the areas just described. These second tracings were independently superimposed over the first and judged for comparability by Higley and the writers. They were found closely to approach exact duplication.

The head circumference and head length records were obtained from the facial growth study anthropometric cards. Each of these records was the average of separate measurements taken by two trained anthropometrists. Head length was measured with spreading calipers. The left branch of the calipers was applied over the glabella and the right branch moved up and down the rear of the head in the median plane until the maximum diameter was encountered. A steel millimeter tape was used in determining head circumference. The anthropometrist extended the tape around the child's head, adjusted it posteriorly over that part of the occiput farthest from the glabella, and anteriorly immediately superior to the superciliary arches, and applied sufficient tension to the tape to crush the hair. Care was taken to remove any obstacles (e.g., hair clasps or ribbons), to find the greatest circumference through the glabella, and to bring the hair snugly against the head.

Ratings for dentofacial condition were made by Dr. L. B. Higley. These were made prior to selection of the subjects for the present study. Only individuals classified as "Normals," "Class I," and "Class II, division 1" were selected.[4] Table I itemizes the numbers in each class.

TABLE I. ORTHODONTIC CLASSIFICATION

	NORMALS	CLASS I	CLASS II, DIV. 1	TOTAL
Males	29	13	4	46
Females	26	14	14	54
Both sexes	55	27	18	100

FINDINGS ON MANDIBULAR BASAL BONE LENGTH

The relationship of mandibular basal bone length to length and girth of head was first studied by the method of correlation. Grouping together individuals in the Normal and Class I categories, the Pearson Product-Moment coefficients as shown in Table II were obtained.

TABLE II. MANDIBULAR BASAL BONE LENGTH

	MALES		FEMALES	
	N	$r \pm$ S.E.	N	$r \pm$ S.E.
Head length	42	0.30 ± 0.14	40	0.48 ± 0.12
Head girth	42	0.29 ± 0.14	40	0.48 ± 0.12

It will be seen that the coefficients obtained are no larger for mandibular basal bone length with head circumference than for mandibular basal bone length with head length. In both instances the relationship appears to be positive but fairly low.

Since the orthodontic interest is that of predicting mandibular basal bone length from the more easily obtained head dimensions, the standard errors for such predictions were calculated. The standard error of estimate for mandibular basal bone length from head circumference is 2.85 mm. on males and 2.80 mm. on females. Corresponding values for mandibular basal bone length from head length are 2.84 mm. and 2.79 mm. on males and females, respectively. This implies that on the whole the error in predicting mandibular body length from either head measurement exceeds 2.7 for one individual in every three. Occasionally the error is as great as plus or minus 6 to 7 mm.

A simpler though less rigorous method of displaying these findings on relationship and prediction is available in the use of nine-cell tables. In constructing these, the data on males and females were pooled for each measurement. The 82 children were then divided as nearly as possible into the upper one-fourth, the middle half, and the lower one-fourth. It was subsequently possible to compute the percentage of children in each of nine cells, as in the tabulation in Table III for head girth and mandibular basal bone length.

TABLE III. MANDIBULAR BASAL BONE LENGTH WITH HEAD GIRTH

	MANDIBULAR BASAL BONE LENGTH		
HEAD GIRTH	SHORT (LESS THAN 63.5 MM.)	MEDIUM (63.5-67.9 MM.)	LONG (OVER 68 MM.)
Large (over 51.6 cm.)	1%	10%	12%
Medium (49.8-51.5 cm.)	13%	30%	12%
Small (under 49.8 cm.)	10%	10%	2%

If there existed a high positive relationship between these two variables, percentage figures would only occur in the three cells "small-short," "medium-medium," and "large-long." The divergencies from this are as follows:

1. Of the 23 per cent with "large" head girths, 10 per cent had mandibles of "medium" length, and for 1 per cent the mandible length was "short."
2. Of the 55 per cent with "medium" head girths, 13 per cent had "short" mandibles and 12 per cent "long" mandibles.
3. Of the 22 per cent with "small" head girths, 10 per cent had mandibles of "medium" length, and for 2 per cent the mandible was "long."

Similarly, a nine-cell tabulation showing the percentage distribution for head length and mandibular basal bone length was constructed (Table IV).

TABLE IV. MANDIBULAR BASAL BONE LENGTH WITH HEAD GIRTH

	MANDIBULAR BASAL BONE LENGTH		
HEAD LENGTH	SHORT (LESS THAN 64 MM.)	MEDIUM (64-67.9 MM.)	LONG (OVER 68 MM.)
Long (over 18.2 cm.)	2%	11%	10%
Medium (17.1-18.2 cm.)	11%	29%	12%
Short (under 17.1 cm.)	11%	9%	5%

The absence of a high positive relationship between these two variables is quite apparent, i.e., percentage figures occupy all nine cells, rather than only the "short-short," "medium-medium," and "long-long." Specifically, the digressions are:

1. Of the 23 per cent with the "long" heads, 11 per cent had mandibles of "medium" length, and for 2 per cent the mandible length was "short."

2. Of the 52 per cent with "medium" head lengths, 11 per cent had "short" mandibles and 12 per cent "long" mandibles.

3. Of the 25 per cent with "short" heads, 9 per cent had mandibles of "medium" length, and for 5 per cent the mandible was "long."

The foregoing analyses have been based exclusively upon data for the 82 individuals in the categories "Normal" and "Class I." In order to discover whether the mandibular basal bone length was relatively shorter among individuals in the "Class II" category, these 18 individuals were compared with those classified as "Normal" or "Class I." The procedure was as follows: For each of the 100 individuals in the total sample, the ratio of mandibular basal bone length to head length was calculated. The difference between the ratios for the "Normal" and "Class I" group and those for the "Class II" group was not statistically significant ($t = 1.46$). On the average, mandibular basal bone length equaled 37.2 per cent of head length in the sample of 82 "Normal" and "Class I" individuals, and 36.5 per cent of head length in the 18 individuals of "Class II." Table V shows the overlapping of the two distributions.

TABLE V. MANDIBULAR BASAL BONE LENGTH IN PER CENT OF HEAD LENGTH

	PERCENTAGE CLASSES								
	32	33	34	35	36	37	38	39	40
Normals and Class I	1	2	9	10	15	15	17	9	4
Class II			3	5	3	3	3	1	

FINDINGS ON SELLA TURCICA-NASION DEPTH

Coefficients were determined representing the degree of association between sella turcica-nasion depth and length and girth of the head. The Pearson Product-Moment coefficients for those children in the Normal and Class I categories are shown in Table VI.

TABLE VI. SELLA TURCICA-NASION DEPTH

	MALES		FEMALES	
	N	$r \pm$ S.E.	N	$r \pm$ S.E.
Head length	42	0.54 ± 0.10	40	0.37 ± 0.13
Head girth	42	0.44 ± 0.12	40	0.39 ± 0.13

The coefficients obtained show no difference for females, and no dependable difference for males. A rather low positive relationship exists in both instances.

The standard error of estimate for sella turcica-nasion depth from head circumference is 2.46 mm. on males and 2.38 mm. on females. For sella turcica-

nasion depth from head length, the values are 2.08 mm. and 2.41 mm. on males and females, respectively. Hence, prediction of sella turcica-nasion depth from head girth or head length would be in error by more than 2 mm. for one out of every three individuals. Occasional errors from prediction would be as high as plus or minus 6 to 7 mm.

Again, through the use of the nine-cell tables, it is possible to indicate by tabular means the low relationships found. Table VII is the tabulation (both sexes together) for head girth and sella turcica-nasion depth.

TABLE VII. SELLA TURCICA-NASION DEPTH

HEAD GIRTH	SHORT (LESS THAN 59 MM.)	MEDIUM (59-62.9 MM.)	LONG (OVER 63 MM.)
Large (over 51.6 cm.)	2%	11%	10%
Medium (49.8-51.5 cm.)	10%	29%	16%
Small (under 49.8 cm.)	10%	11%	1%

1. Of the 23 per cent with the "large" head girths, 11 per cent had a "medium" sella turcica-nasion depth, and for 2 per cent this S-N depth was "short."

2. Of the 55 per cent with "medium" head girths, 10 per cent had "short" sella turcica-nasion depths and for 16 per cent this S-N depth was "long."

3. Of the 22 per cent with "small" head girths, 11 per cent had a "medium" sella turcica-nasion depth, and for 1 per cent this S-N depth was "long."

The nine-cell tabulation showing the percentage scatter for head length and sella turcica-nasion depth is shown in Table VIII.

TABLE VIII. SELLA TURCICA-NASION DEPTH

HEAD LENGTH	SHORT (LESS THAN 58.9 MM.)	MEDIUM (59-62.9 MM.)	LONG (MORE THAN 63 MM.)
Long (over 18.2 cm.)	2%	10%	11%
Medium (17.1-18.2 cm.)	12%	26%	15%
Short (under 17.1 cm.)	7%	16%	1%

1. Of the 23 per cent with the "long" heads, 10 per cent had sella turcica-nasion depths of "medium" length, and for 2 per cent this S-N depth was "short."

2. Of the 53 per cent with "medium" head lengths, 12 per cent exhibited "short" sella turcica-nasion depths, and for 15 per cent this S-N depth was "long."

3. Of the 24 per cent having "short" head lengths, 16 per cent had sella turcica-nasion depths of "medium" length, and for 1 per cent the S-N depth was "long."

Comparisons were made to discover whether sella turcica-nasion depth was relatively greater in the 18 individuals of "Class II" than in the 82 individuals of the "Normal" and "Class I" groups. The ratio of sella turcica-nasion depth to head length was calculated for each of the 100 individuals. No statistically significant ($t = 0.40$) difference was found between the ratios of the "Normal" and "Class I" groups and those of the "Class II" group. The sella turcica-nasion depth, on the average, was 34.5 per cent of head length for the 82 "Normals" and "Class I's." Table IX shows the degree of overlap of the two distributions.

TABLE IX. SELLA TURCICA-NASION DEPTH IN PER CENT OF HEAD LENGTH

	PERCENTAGE CLASSES									
	29	30	31	32	33	34	35	36	37	38
Normals and Class I	1		2	7	19	22	17	11	2	1
Class II				2	4	3	7	2		

SUMMARY

This investigation is concerned with the interrelationship of selected dimensions of the head. It treats the degree of association between (1) head circumference and length of mandibular basal bone, (2) head circumference and sella turcica-nasion depth, (3) head length and length of mandibular basal bone, and (4) head length and sella turcica-nasion depth. The sample utilized consists of 100 white children, all examined within three days of their fifth birthday.

The orthodontic interest in this problem lies in the possibility of predicting mandibular basal bone length and sella turcica-nasion depth from more easily obtained head dimensions.

Selected findings are:

1. The error in predicting mandibular basal bone length from either length or girth of head would exceed 2.7 mm. for one child in every three. Occasionally the error would be as great as 6 to 7 mm.

2. Prediction of sella turcica-nasion depth from head girth or length would be in error by more than 2 mm. for one out of every three children. Occasional errors of predictions would be as high as 6 to 7 mm.

Considering that it would be impossible to tell in day-to-day predictions on which children the largest errors were being made, and whether these individual errors were in the positive or negative direction, it is recommended that mandibular basal bone length and sella turcica-nasion depth be determined by direct measurement upon the profile roentgenogram.

The 't test' was employed to determine whether any significant difference existed between the 82 individuals in the "Normal" and "Class I" groups and the 18 in the "Class II" group, in (1) the ratio of mandibular basal bone length to head length and (2) the ratio of sella turcica-nasion depth to head length. No statistically significant differences were found. Consequently, it cannot be

said with any degree of certainty that a "Class II" dentofacial deformity is typified by a relatively "shorter" mandible or a relatively deeper upper face as compared to the "Normal" or "Class I" classification.

REFERENCES

1. Higley, L. B.: A Head Positioner for Scientific Radiographic and Photographic Purposes, INT. J. ORTHODONTIA 22: 699-704, 1936.
2. Higley, L. B., and Speidel, T. D.: Preliminary Study of Orthodontic Results as Revealed by Roentgenographic Cephalometric Records, AM. J. ORTHODONTICS AND ORAL SURG. 24: 1039-1050, 1938.
3. Gray, Henry: Anatomy of the Human Body, ed. 24, Philadelphia, 1944, Lea & Febiger, p. 139.
4. Strang, Robert H.: A Text-book of Orthodontia, ed. 2, Philadelphia, 1943, Lea & Febiger, pp. 77-81.

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THE QUALIFICATIONS AND EFFECTIVENESS OF THE OCCLUSAL GUIDE PLANE

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THE occlusal guide plane has been presented and discussed on numerous occasions by such outstanding men of this profession as Dr. Oren A. Oliver, Dr. Russell E. Irish, Dr. E. C. Lunsford, and the many other orthodontists who have advocated its use.

I feel that it will be impossible for me to add anything new to this discussion, but I would like to summarize some of the various points that have been brought out concerning this appliance.

In order that we have a clear understanding of the occlusal guide plane, however, it is necessary that we arrive at some mutual definition. The occlusal guide plane has been defined as a mechanical device having an established inclined plane which, when in use, causes a change in the occlusal relation of the maxillary and mandibular teeth and permits their movement to a normal position.

The purpose of the occlusal guide plane is to obtain a change in the structural relation of the oral cavity and to aid in the establishment of a correct anterior-posterior relation of the teeth and arches. We know that the occlusal guide plane is a fixed removable appliance which has a decided advantage over the ordinary type in that the patient cannot put it in or take it out at will. It is constructed on a maxillary lingual appliance so that the mandibular incisors do not engage it forcefully, but are guided anteriorly to the plane when the jaws are brought together. The occlusal guide plane should rest on the lower lingual appliance or be slightly anterior to it and touch the lower lingual appliance from cuspid to cuspid when the teeth are in occlusion. In most cases in which bite opening is indicated, the molars and premolars will be out of occlusion when the appliance is first placed on the teeth. When constructing the occlusal guide plane, the relation of the mandible and the maxilla is set to a determined position, permitting the premolars and molars to meet in what is known as normal occlusion. This point at which the mandible is placed is a position of mechanical advantage, and the occlusal guide plane is constructed to hold this point on closure of the jaws. The greatest advantages of the occlusal guide plane are that it permits freedom in tooth movement and does not load the teeth with bands. Mershon has said that any appliance or procedure that limits the slight movement which is natural with teeth impairs the tooth function. In changing the anterior-posterior relation of the mandible and the maxilla, we also change the incisal relation. The pitch or variance from perpendicular of this auxiliary is determined primarily by the change of anterior-

posterior relation of the arches, and secondarily by the amount of occlusal separation between the maxillary lingual appliance and the mandibular lingual appliance. The incline of the plane is not made in a hit-or-miss fashion, but is built to precision. It may have a slight forward or backward inclination to conform to the individual case. The depth of the plane will vary with each individual case, and will be governed by the pitch and amount of space between the maxillary lingual appliance and a position where it will strike the mandibular lingual appliance. In some cases it might even touch the cuspids or lower anterior teeth slightly at the gingival margin. By changing the incisal as well as the occlusal relation, nature is free to let the teeth move into their respective positions. If the appliance is constructed properly, the patient cannot bite posterior to the occlusal guide plane but will be guided to only one point of rest when the teeth are in full occlusal position. The occlusal guide plane must be constructed on a maxillary lingual that will *not form* a pointed curve but rather a squared curve at the cuspids. This should not be overdone, however. A poorly constructed lingual appliance as a foundation causes the plane to dig into the tissue. The lingual appliance should hug the premolars as much as possible. I do not intend to go into detail on its construction at this time as this is adequately covered in the book *Labio-Lingual Technic*.

The idea of the occlusal guide plane is not new by any means and was probably begun many years ago by Duval, Fox, and Delabarre when they constructed various appliances to change the bite. I use the term occlusal guide plane, but not in the real sense of the word as we know it today, because it, like anything else, has gone through various stages of development. These premature attempts at constructing an occlusal guide plane were in reality nothing but inclined planes. An inclined plane is defined as "some form of plate which the mandibular incisors forcefully engage in closure." It seems that the earliest inclined planes were used only to release the lingual lock of the maxillary anterior teeth. Kingsley seems to have been the first to use the inclined plane on the maxilla to change the anterior-posterior relation of the jaw, and was inseverably associated with "jumping the bite." He was also apparently the first to use the inclined plane on Class II or distoclusion cases. From Kingsley on up to Hawley various types of planes were constructed, but all of them failed because their results could not be permanent. After the bites were changed they could not be made to stay there. In 1919 Oliver constructed a plane with the same idea in mind as the other men had had, that of changing the bite. His first plane had no definite height or pitch and in reality was the same as had previously been made except that precious metal was used in its construction. Using this particular plane he realized that some change had to be made in order to get a surer movement and a more permanent one. This he accomplished in 1923 with his next edition of the occlusal guide plane by constructing it from lateral to lateral and extending down to the lower lingual appliance. The next major change in the occlusal guide plane was to extend it laterally to the center of the cuspids; through this step the patient could not move laterally and had only one position of closure. Fifteen years after the first construction of the

occlusal guide plane, it was described and discussed in detail in the textbook *Labio-Lingual Technic.*

There are definite limitations regarding the use of the occlusal guide plane, and we should apply the appliance to the case rather than the case to the appliance. Important as any appliance may be in orthodontic treatment, the judgment and experience of the operator are the deciding factors. Correct selection and application still determine the success or failure of the most perfectly constructed appliances.

Oliver recognized in his experiments with the occlusal guide plane that it was a definite adjunct to labiolingual technique. Nearly all cases which have been classified as Class II, Division 1 types of malocclusion, in which it is desirable to reposition the mandible forward in relation to the maxilla, are indications for the use of the occlusal guide plane. Since this appliance guides the mandible forward, on occluding, caution must be exercised in extreme cases not to set the mandible too far forward permitting the patient to be guided posterior to the plane rather than in front of it. On some extreme cases many guides are constructed successively, each permitting the mandible to move forward a little more each time. Intermaxillary elastics are an ideal supplement to the treatment of this type of case. These cases are improved immediately, thus encouraging the patient to cooperate to the fullest of his or her ability.

Another type which nearly always is treated successfully by the occlusal guide plane is that of Class II, Division 2. Here the maxillary incisors are retruded to an extent that it may be necessary to move these teeth forward before placing the occlusal guide plane. In these cases in which the plane may be used from the beginning, it is a definite asset in moving the maxillary anterior teeth to a normal position.

A third indication for the use of the occlusal guide plane is the treatment and correction of cases falling into the subdivisions of Division 1 and 2 of Class II. The condition to be treated is that of a unilateral distoclusion with the same characteristics as the respective divisions.

Certain Class I cases with a closed bite can be treated successfully, but care should be used in selecting the case and success is accomplished by the depression of the anterior teeth as well as the elongation of the posterior teeth.

The use of the occlusal guide plane is contraindicated in nearly all other types of cases not mentioned previously. Especially is it contraindicated in Class III, and in open-bite cases. As in selection of any type of appliance, diagnosis and judgment must be exercised.

We are often confronted with the problem of extraction. There is nothing new about the idea, for back in 1757 Bernard Bourdet advocated the extraction of two maxillary premolars to allow room for the canines to erupt. Later Dewey and Case argued over this same question of extraction. We all must keep a level head in this matter of extraction and consider each case individually throughout the treatment. Surely we would not practice extraction in 95 per cent of our patients if we considered other factors as important as that of a perfect alignment. If the extraction of four permanent premolars in a Class II case is indicated, the occlusal guide plane will still produce a satisfactory result.

We have all been groping for quite some time trying to figure out just what happens when bites are changed. We know that Brash, Schour, and Brodie have given us some valuable information on the growth of the mandible. They found that growth was present, in general, throughout the mandible until the eruption of the first permanent molar. Thereafter, growth was restricted to the posterior borders of the rami, the alveolar process, the border of the sigmoid notch, and the head of the condyle. Vertical growth is confined to additions in the alveolar process and the upward growth of the heads of the condyles against a plane that is descending. Therefore, the mandible is forced downward. The condyles are apparently the growth centers that retain their activity the longest, for they must act as the compensating factors that take care of all the vertical growth processes of both mandible and maxilla.

Most of our patients at the age they are placed under treatment have already completed the growth in the body of the mandible. Therefore, when the bite is changed and the posterior teeth are elongated, we cannot get our change in the body of the mandible but must be getting it in the alveolar process to some extent and also in the head of the condyles where growth is active until adu't life.

The question of whether any pathology has been created in the condyle area has also been asked by those using the occlusal guide plane as well as those not using it. Costen has proved conclusively that close-bite cases and those with the retruded mandible are definitely responsible for neuralgia in some of the older patients. When the bites were opened and correction was under way, this neuralgia ceased.

Lunsford, Terry, and more recently others have made scientific investigations to determine exactly what change has taken place, if any, in patients treated with the occlusal guide plane. This is being carried out by a series of case histories with models and x-rays of the temporomandibular articulation both before and immediately after placing the occlusal guide plane. Later a series of follow-up x-rays were taken during, after, and then, when possible, several years after treatment time. Progress has been slow but some definite findings have been made. When the occlusal guide plane is placed in the patient's mouth, the condylar head is pulled downward and forward out of the glenoid fossa, but later x-rays indicated, after movement of Class II cases using the occlusal guide plane, that the condylar head is again in the glenoid fossa in a normal relation. Terry and Lunsford have been carrying on this experiment for about three years. There was no evidence of pathology in cases investigated at any time in so far as it has been possible to determine.

The return to normal in the temporomandibular articulation is undoubtedly to stimulate growth in the head of the condyle for this remains an active growth center of bone until the patient reaches adulthood. Since nothing is stationary or static, other adjustments probably occur in the glenoid fossa. We feel that the movement and change definitely lie in physiologic limits and have been demonstrated clinically for many years. If this growth or change at the head of the condyle is not pathologic but is a physiologic change, we will have no

relapse of the bite. This appliance has succeeded in locking the bite where others have failed by the ability to limit the bite to only one point of closure. When we fail to get our results, we should remember that it is not the failure of the appliance but more often the fault of the operator in his diagnosis and application of the appliance.

I would list the advantages of the occlusal guide plane as follows:

1. Immediate changing of the bite, which allows the intermaxillary rubber bands to go to work from a determined point, thus cutting down treatment time.

2. Opening of the bite, permitting vertical growth and unlocking of the cuspids.

3. By placing the arches in normal position immediately, the patient is given benefit of normal muscular action and gaining more room for the tongue and passages of air.

4. Fixing the bite at a definite place rather than letting the patient bite behind, on, or anterior to the appliance as can be done with other inclined planes.

5. It immediately changes the profile to a pleasing one, thus encouraging the patient to wholehearted future cooperation.

6. It is simple though sturdy in design, and is easily removed, adjusted, and replaced by the operator.

7. It can be used on all types of dentition.

8. It balances the anterior-posterior relation of the jaws as well as the incisal relation, an objective which must be accomplished if functional retention is to be realized and maintained.

If you are not employing the use of the occlusal guide plane, I invite you to give this appliance an unbiased trial, particularly in the aforementioned cases in which its best results may be attained. To you who are already using occlusal guide plane in your daily practice, I implore you to continue to fit the appliance to the case and to continue to strive for the gratifying results this plane can give when used properly.

The occlusal guide plane is truly a step forward in the field of orthodontics and, as I have tried to show, it rightly deserves the use and credit it is receiving because it, like any of the improvements or developments in the field of science and medicine, is an aid to mankind. There is always room in this world for scientific improvement, and because of its many advantages the occlusal guide plane is a benefit to society.

REFERENCES

1. Broadbent, B. Holly: Odontogenic Development of Occlusion, University of Pennsylvania Bicentennial Conference, Philadelphia, 1941, University of Pennsylvania Press.

2. Costen, James B.: Neuralgias and Ear Symptoms Associated With Disturbed Function of the Temporomandibular Joint, J. A. M. A. **107**: 252-255, 1936.

3. Costen, James B.: A Syndrome of Ear and Sinus Symptoms Dependent Upon Disturbed Functions of the Temporomandibular Joint, Ann. Otol., Rhin. & Laryng. **43**: 1, 1934.

4. Hellman, Milo: Odontogenic Development of Occlusion. University of Pennsylvania Bicentennial Conference, Philadelphia, 1941, University of Pennsylvania Press.
5. Irish, Russell E.: A Discussion of the Occlusal Guide Plane, AM. J. ORTHODONTICS AND ORAL SURG. **29**: 699-711, 1943.
6. Jackson, Andrew Francis: The Art of Orthodontic Practice, AM. J. ORTHODONTICS **34**: 383-413, 1948.
7. Johnson, A. LeRoy: The Law of Occlusion and the Normal in Orthodontics, INT. J. ORTHODONTIA, **4**: 588, 1918.
8. Lunsford, E. C.: Personal communication.
9. Mershon, John V.: The Removable Lingual Arch Appliance. The First International Orthodontic Congress, August, 1926, St. Louis, 1927, The C. V. Mosby Company.
10. Mershon, John V.: Orthodontic Facts Versus Fallacies. The First Inter-American Orthodontic Congress, March, 1942, St. Louis, 1943, The C. V. Mosby Company.
11. Nagamoto, George: The Significance of Proper Mechanical Therapy in Orthodontic Treatment, AM. J. ORTHODONTICS **35**: 269-278, 1949.
12. Nance, Hayes N.: The Limitations of Orthodontic Treatment, AM. J. ORTHODONTICS AND ORAL SURG. **33**: 177-223, 1948; 253-301, 1947.
13. Oliver, O. A., Irish, R. E., and Wood, C. R.: Labio-Lingual Technic, St. Louis, 1940, The C. V. Mosby Company.
14. Oliver, O. A.: Indications for the Occlusal Guide Plane, AM. J. ORTHODONTICS AND ORAL SURG. **31**: 520, 1945.
15. Oliver, O. A.: Indications for the Occlusal Guide Plane, AM. J. ORTHODONTICS AND ORAL SURG. **31**: 520-526, 1945.
16. Tarpley, Boyd W.: The Guide Plane as an Aid to Labiolingual Technique, AM. J. ORTHODONTICS **34**: 153-158, 1948.
17. Tarpley, Boyd W.: Variations in the Use of the Labio-Lingual Appliance, AM. J. ORTHODONTICS AND ORAL SURG. **29**: 208-215, April, 1943.
18. Terry, H. K.: Personal communication.
19. Weinberger, Bernhard W.: Orthodontics, an Historical Review of Its Origin and Evolution, St. Louis, 1926, The C. V. Mosby Company.

2118 FOURTEENTH AVENUE SOUTH.

ORTHODONTIC AND PROSTHETIC PROBLEMS IN CONNECTION WITH TREATMENT OF NONERUPTION

HANS R. MÜHLEMANN, DR. MED., DR. MED. DENT.,* ZÜRICH, SWITZERLAND

THE alignment of nonerupted teeth in the dental arch is a common task for the orthodontist. A good x-ray is indispensable for making a prognosis. Often an x-ray will reveal the cause of noneruption and at the same time indicate the necessary treatment. To mention only the most frequent cases: a supernumerary tooth or an odontoma must be removed in order to give the permanent tooth free access to the dental arch (Figs. 1 and 2). In other cases the space which should be occupied by the nonerupted permanent tooth has become too small as a result of premature loss and consequent mesial migration of the permanent teeth. This space should be widened by orthodontic methods with an appliance or one should consider the extraction of permanent teeth, especially in cases which for different reasons cannot be treated by any mechanical means (Figs. 3, 4, and 5).

Other causes of noneruption may be crowding, cleft palate, tooth gemination, ectopia, hypoplasia of the os intermaxillare, and probably hereditary factors. It is not our purpose to deal with the etiology but to describe some of our experiences in treating noneruption.

The most common cases to be treated are canine noneruptions. If the position and inclination of the tooth are judged favorable and if the obstruction can be removed, then success of orthodontic treatment is to be expected even in adults. Lateral x-rays of nonerupted canines should be made. This facilitates greatly orthodontic planning (Hotz[1]).

In some cases the prognosis for the whole masticatory apparatus is improved if there is a possibility of treating nonerupted or unerupted third molars. The method indicated in the following cases will be described in detail.

CASE REPORTS

CASE 1.—A 14-year-old girl was suffering from pronounced malocclusion and traumatic arthritis of both temporomandibular joints. For reasons unknown to us, the lower right first and second molars (and $\underline{6\,5}|$) had been extracted some years previously (Fig. 6). Besides the therapy of malocclusion carried out by removable appliances within eighteen months (a monobloc worn at night, a bite plane during the day), the crown of the mandibular third molar was exposed under regional anesthesia, and with the aid of elastic traction was made to erupt prematurely. A hook was cemented onto the occlusal surface for the fixation of the elastic bands. This method was adopted in order to retain the

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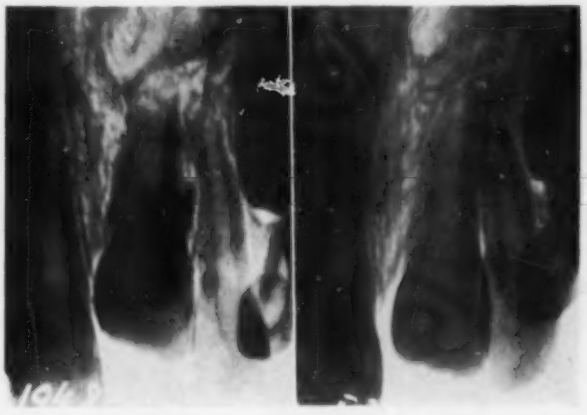

Fig. 1. Fig. 2.

Figs. 1 and 2.—A supernumerary tooth (mesiodens) being the cause of noneruption of the left maxillary central incisor. Four months after its removal the permanent incisor spontaneously reached the dental arch.

Fig. 3.—Noneruption of the left maxillary second premolar as a result of premature loss of deciduous molars and consequent mesial migration. *Treatment:* Extraction of the left maxillary first premolar and myotherapy (Figs. 4 and 5).

Fig. 4. Fig. 5.

Figs. 4 and 5.—Models before and after treatment. Extraction of the left maxillary first premolar and myotherapy.

results of the orthodontic treatment of the distal bite and the deep overbite and at the same time to guarantee normal and equilibrated function of the temporomandibular joints. The treatment will only be complete when the roots of the third molar are fully developed and when they permit the construction of a bridge using the right premolars as abutments. In the meantime, retention of the result obtained is maintained by use of an Andresen appliance (Fig. 7).

Fig. 6. Fig. 7.

Fig. 6.—Pronounced Class II, division 1 malocclusion with traumatic arthritis of the temporomandibular joints. The right mandibular first and second molars have unfortunately been extracted. The right mandibular third molar is unerupted.

Fig. 7.—Result of orthodontic treatment. The right mandibular third molar has erupted and the malocclusion improved.

Case 2.—A 34-year-old woman doctor had multiple nonerupted teeth in the mandible (Figs. 8 and 9). The left mandibular canine and second premolar gave the impression of being impacted. But impaction probably is not the only cause of noneruption as the first premolar was not obstructed either by the canine or the second premolar or by the roots of the neighboring teeth. It was mainly on account of psychological factors rather than a result of functional loss that this patient had an inferiority complex. Indeed, she was very conscious of the absence of these teeth when speaking or laughing.

We decided on orthodontic treatment but no guarantee of success could be given. The alveolar bone covering the teeth was resected in order to gain access, and the exposed crowns were wired through small holes (Fig. 10). During the operation it was unexpectedly difficult to distinguish enamel from bone. The pericoronal space was partly missing. Pieces of bones which were adhering to the surfaces of the crowns were chipped off with difficulty. Orthodontic treatment lasted about seven months, but the teeth did not move at all in spite of the use of forceable traction. This was rather disconcerting but the case was not abandoned. It would have been easy to supply her with a denture but it would not have been worn. In addition to this, she did not permit the incisors to be used as bridge abutments.

Having taken everything into consideration, we resorted to a rather unusual method and decided to use the teeth lying in the bone as abutments for a "bridge." There were many objections. We did not know the prognosis. What would the technical reasons be? What would be the reaction of these teeth when subjected to stress and strain and what would the reaction of the tissues after undergoing so much surgical disturbance be? Was there any

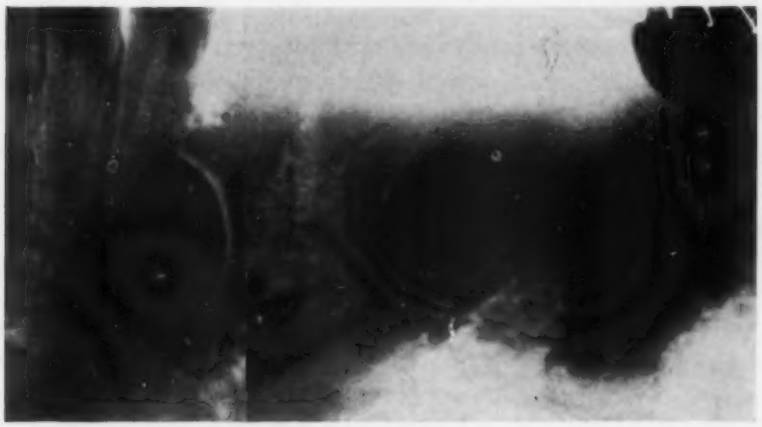

Fig. 8.—Hereditary noneruption of the left mandibular canine, first premolar, and second premolar in a patient 34 years of age. The unusual relation between crown, root, and bone should be observed. The pericoronal and periradicular spaces are sometimes absent.

Fig. 9.—Occlusal view of the nonerupted left mandibular canine and first premolar. The second premolar is projected over the first molar.

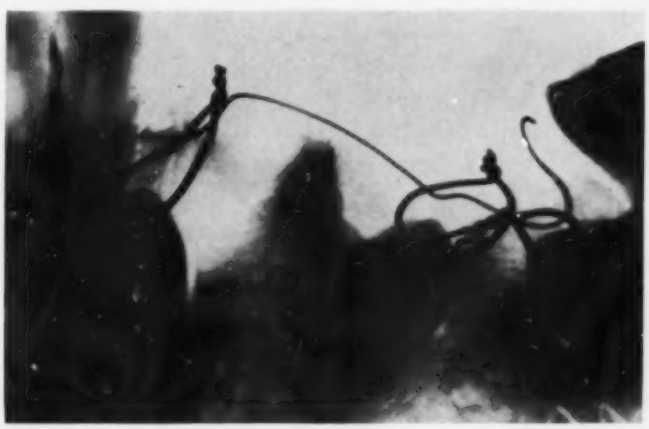

Fig. 10.—Channels in the bone leading to the surface of the crowns wired through small holes. The horizontal thin wire prevents the submergence of the tooth ligatures under the gingival surface.

danger of the bone becoming infected along the supports? This latter question in particular gave us some cause for hesitation, and for this reason we tried to diminish the possibility of infection—we shortened the length of the bone channels made in the previous operation by chipping away the remains of the alveolar crest, and a nonirritating bridge construction was planned. The course of the treatment follows.

First Session.—In regional anesthesia an incision was made along the top of the alveolar crest reaching from the lower left second molar to the incisor region. A mucoperiosteal flap was pulled aside and the alveolar bone was resected. The crowns were completely exposed, and under the continual irrigation with normal saline we prepared cavities in the canine and first premolar and took an impression (indirect technique, copper ring with impression compound). The operation, which lasted about two hours, was finished by suturing the wound. The points of access to the crowns were kept slightly open by a light pack. The wire hole in the second premolar was filled with copper amalgam.

Fig. 11.—Gold crown with shoulder, shoulder inlay, and inlay caps with supporting studs on the model.

Second Session.—A week later the healing wound had to be reopened in order to cement the two inlay caps to the crowns (Fig. 11). Into these inlays were screwed a bent and a straight supporting stud. We tried with great care to obtain a satisfactory join between enamel and metal. The field of operation was closed in the same manner as in the first session. The duration of the operation was one and three-fourths hours. In the sittings which followed, prosthetic work was completed. Fig. 11 illustrates the supports on the models. The principles of construction resemble the methods used by A. Steiger, D.D.S., Zurich. All these single parts (Fig. 12) can be very easily put together to form a bridge (Figs. 13, 14, and 15), which is removable by the dental surgeon for cleaning. Fig. 14 shows that we were obliged for esthetic considerations to construct artificial gums.*

*Here we wish to thank Mr. H. Hürlimann, technician, for his competent aid and collaboration.

The patient has already worn the restoration fourteen months. From a functional as well as from an esthetic, hygienic, and psychological point of view, she is satisfied and contented. We still do not know what the final result will be.

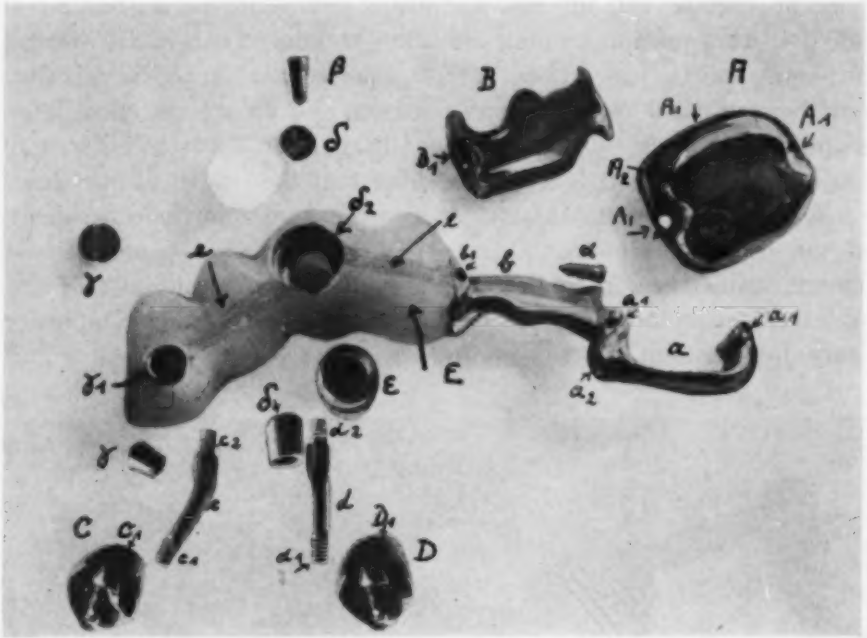

Fig. 12.—*A*, Full-gold veneer crown on the left mandibular second molar with cast band of soft gold. A_1, Shoulder with pinholes. A_2, Screw stop for *a*. *a*, Shoulder inlay with pins a_1, thread a_2, and screws *a*. *B*, Gold inlay *MOD* on left mandibular first molar. B_1, Thread. *b*, Gold inlay on *B*. b_1, Threaded hole for *β*. *C*, *D*, Inlay caps as abutments for the bent and straight supporting studs *c* and *d*. C_1, D_1, Location of threads of c_1, d_1 (not shown in the illustration). c_2, d_2, Thread for the fixation of the pontic through the bushings γ_1, δ_2, *ε*. *E*, Acrylic pontic.

Fig. 13.

Fig. 14.

Figs. 13 and 14.—Bridge in situ.

Up to the present there have been no subjective or objective indications which would suggest failure. Even if the result should not be satisfactory, the patient will know that everything has been done. Moreover, the present construction is planned so that it can be used partly for partial denture construction in case the nonerupted teeth have to be extracted.

What lessons may be learned from this case? We will be more prudent in judging the prognosis of orthodontic treatment of multiple noneruption. Noneruptedteeth to which bone is adhering as described in our case 2 cannot be pulled to the surface without risk of failure. It would be a great advantage, however, if it were possible to plan the whole treatment before discovering, during the course of the operation, that the pericoronal space is missing. We observed these unusual relations between bone and enamel in other later cases of multiple noneruption. The role of hereditary factors in the etiology of noneruption is well known. It is not astonishing that the mother of our Case 2 told of the loss of a deciduous tooth after every pregnancy and the consequent eruption of the permanent tooth. Our patient had not only noneruption of the mandibular canine, first premolar, and second premolar, but also of the mandibular left third molar. As in hereditary cases, it was lying ectopically (i.e., hereditary displacement) in the mandible (Fig. 15).

Fig. 15.—Bridge on the nonerupted mandibular canine and first premolar. Observe the gingival contour.

To summarize, we will in the future *refrain from treating multiple noneruption with orthodontic methods if hereditary factors may be present* as indicated in our patient's case history. Histologic findings[2] of noneruption confirm this. The eruption of a tooth depends on the integral function of the inner and outer layer of the ameloblasts. If their function is disturbed (questionably heredity), then this may lead to resorption of enamel and its subsequent replacement by cement or bone, thus creating abnormal relations between the tooth surface and the surrounding bone.

REFERENCES

1. Hotz, R.: Orthod. Fortbildung für den prakt. Zahnarzt, Bern, 1947, Hans Huber.
2. Kotanyi, E.: Histol. Befunde an retinierten Zähnen, Ztschr. f. Stomatol. 22: 747, 1924.

In Memoriam

JOHN MILTON JONES
1881-1949

JOHN MILTON JONES, of Wichita, Kansas, died suddenly on Saturday, Oct. 8, 1949, after a long illness.

Dr. Jones was one of the pioneers in orthodontics in Kansas. He was the first orthodontist in exclusive practice in Wichita, where he practiced for twenty-nine years until his retirement one and one-half years ago.

Dr. Jones was born Feb. 22, 1881, at Cherokee, Kansas. He attended the public schools of Cherokee, and graduated from Kansas City Dental College in 1913; he practiced in Wellington, Kansas, from 1913 to 1916, and in 1916 graduated from the International School of Orthodontia. He was an early associate of the late Martin Dewey.

He was a member of the Wichita Rotary Club, Men's Dinner Club, the Congregational Church, American Dental Association, American Association of Orthodontists, and the Southwestern Society of Orthodontists.

Department of Orthodontic Abstracts and Reviews

Edited by
Dr. J. A. Salzmann, New York City

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Anodontia in Hereditary Ectodermal Dysplasia: By Ralph E. McDonald, *J. Heredity* **40**: 9598, April, 1949.

Patient's History.—Miss J. E., 4 years, white, presented for an examination Oct. 31, 1947. The parents were concerned about their daughter's lack of normal complement of teeth and the unusual morphology of those teeth present. The mother related that pregnancy was uneventful and the baby was full term. At birth there was an absence of hair and a skin eruption was observed and diagnosed as eczema. The first teeth erupted at 10 months and the remaining teeth present seemed to come in "all at once."

Physical Examination.—An oral and physical examination revealed features characteristic of an ectodermal dysplasia. Hypotrichosis was evident to a mild degree, several bald areas being noted on the child's scalp. From the parents it was learned that the patient was suffering from anhidrosis or an abnormal deficiency of sweat. During the summer months the daughter was unable to play outdoors without becoming overheated and obtained relief only after retiring to a cool place. The outstanding ectodermal deficiency was noted in the dentition of the child. From an oral and radiographic examination the following teeth were noted:

Upper denture:
Permanent teeth—central incisors, right cuspid, and first molar.
Deciduous teeth—central incisors, cuspids, and right second molar.
Lower denture:
Permanent teeth—central incisors.
Deciduous teeth—central incisors and left cuspid.

The incisors and cuspids were conical and peg-shaped. The hair of the patient was dry and the skin dry and scaly. This can be explained by an absence or scantiness of the sebaceous secretion (aseatosis). A report from the attending physician at birth ruled out the possibility of congenital syphilis.

There are a number of secondary features often associated with an ectodermal dysplasia, several of which could be demonstrated in this case. There was a deficiency in the salivary flow, the lips were protuberant, and the patient presented a saddle-nosed appearance which seems to be typical in patients suffering from an ectodermal dysplasia.

Family History.—It was impossible to examine the grandparents of the patient, but so far as could be determined they were free from any symptoms of ectodermal dysplasia. The father had a full complement of teeth and other ectodermal structures were normal. Oral radiographic examination of the mother revealed the upper right second and third molars to be congenitally missing.

Her teeth were free of dental caries and she had never undergone any dental operations. A son, aged 5, was unaffected, and oral roentgenograms

failed to demonstrate an absence of teeth. Upon questioning the father concerning possible relationship between him and his wife, it was learned that his grandmother and his wife's mother were cousins.

Two types of Mendelian heredity are commonly recognized in which the gene may be dominant or recessive. In either case the gene may or may not be sex-linked. The hereditary character of the anomaly (ectodermal dysplasia) has been generally accepted as being sex-linked recessive and rarely seen in females. Rushton reported a case in which the dysplasia did not behave as a sex-linked character. A mother and son had varying degrees of anodontia but no other female relatives were known to be affected.

Cerny observed a 12-year-old female with anodontia whose ancestors, brothers, and sisters were free from abnormalities of the teeth.

Weech recorded a case of a white girl, aged 7, with anodontia. An older brother and sister and the parents were free from anomalies similar to those of the patient.

Anodontia, like color blindness, may be inherited as a sex-linked recessive character. The gene for it is transmitted from an affected man to all his daughters because it is in his X chromosome. These daughters will be normal although heterozygous because the gene for anodontia is recessive and is dominated by the corresponding normal gene in their other X chromosome. However, half of their sons by a normal man will receive an affected X chromosome from their mother and will have the defect.

In contrast to a sex-linked inheritance, a recessive gene in some other chromosome may be transmitted through several generations and the defect may not be evident. Cousin (consanguineous) marriages in a family which is carrying the recessive gene may bring this anomaly to the surface.

In order for ectodermal dysplasia to occur in the female, the affected person would have to inherit two affected chromosomes, one from each parent, and a degree of inbreeding makes this situation much more likely.

To summarize, a case of anodontia in the female is reported. The heredity in this case is of an incompletely recessive character. The complex abnormality (ectodermal dysplasia) is evident in the daughter and a slight deficiency in the dentition is noted in the mother. An older brother and the father of the patient are unaffected. Information from the parents indicates that no other members of the family are affected. The mother and father of the patient are distant cousins.

Multum in Parvo: By L. Russell Marsh, F.D.S., R.C.S. (Eng.), *D. Record* **69**: 120-128, May, 1949.

There are expert technicians who regard patients merely as impersonal objects of their craft, not as human beings at all. These fellows ought to be building motor cars. Orthodontics is more than a technical job, more than a biologic study; it is a human responsibility, not only for the successful conclusion of a case, but also for the comfort and happiness of a child during and after treatment. With our skill we can change a child's whole outlook on life, but the real importance of that success is to the child's happiness, not to our records.

I would lay particular emphasis upon the personality of the child and his background. Either you are going to make friends with that child, or you are going to have an uphill fight all the way, with a good possibility of failure, whatever your technical competence and however easy a case it may be. Fortunately, youngsters are very ready to make friends and, generally speaking, are quite prepared to like you, provided that they have no cause to mistrust you. Fortunately, again, our work is not usually painful. But it is

essential never to let the child down, always to warn him when something is likely to be especially uncomfortable. If pain occurs unexpectedly, an immediate apology from one gentleman to another is generously accepted, and is very sound policy. The whole treatment should be a sort of partnership, as indeed it must be, in which the patient understands the immediate as well as the ultimate aim. Lecturing young children is usually hopeless. A friendly talk may be necessary, by the assumption of an existing situation rather than emphasis on duty. Such an expression as "this is for your own good" cuts no ice at all, and neither does the suggestion that a little girl is anxious to grow up to be a beautiful young lady. At the age of 8 years she probably does not care two hoots whether she is going to be a beautiful young lady or not.

Children, particularly young children, are like thoroughbred animals. They are easily startled by sudden noises, and do not like rush and bustle. They have no sense of time, and an atmosphere of hurry distresses and tends to frighten them. An anesthetist friend of mine, who is a great children's man, tells me that he has observed that people with loud voices do not go down well with children, and that this also applies to the bustling type who are always in a hurry. An atmosphere of nonchalance is his technique, and in dealing with young children he is a joy to watch.

It is a good principle not to have the parent in the surgery, as a general routine. This is essential in ordinary dentistry; in orthodontics it is desirable. Personally, I find that the presence of a parent, or any third party, always rather cramps my style. I find it difficult to be quite natural with a "kiddy" in the presence of an audience. In a small degree it is like being on the stage. And, of course, with two people to entertain, one's attention is divided. But, apart from that, you find yourself talking to the parent over the child's head and that is bad, for you never get to know the child, or to establish that personal relationship which is so helpful to success. The child goes through life having grown-ups talking over his head, and, if there is one pleasure in going to the dentist, it is the pleasure of having a grown-up all to himself, to be the center of attention, and to feel important enough to talk man to man with someone older. It may sound like a small matter, but I have found it important in many cases, and the children with whom I have formed what one might call lifelong friendships have usually been those who have not been accompanied in the surgery. I have reached an age when a number of those children are now mothers and fathers themselves, and their loyalty is very pleasing.

Children suffer from self-consciousness, not so much today perhaps as in years gone by, but some suffer more than others, and often quite acutely. This is another important reason why we should strive to attain a relationship of easy camaraderie, for it is important to break down that self-consciousness, which can inflict immeasurable torment. Incidentally, in our small way, we may be doing our little friends a great service by beginning the cure of an affliction. In any event, it is wise to be patient with the shy child, for brusqueness or impatience with his apparent stupidity only makes him curl up.

It is usually obvious whether a child has been wearing an appliance or not, and I think it is better not to ask, thereby inviting an untruth, not to wait until one is quite sure and then, explaining the evidence, make a simple statement of fact and discuss why the appliance has not been worn. And now arises another difficulty. Having put oneself on a plane of friendship with the patient, to invoke parental assistance is rather in the nature of "sneaking." So the first one or two offenses are strictly between "you and me," as it were. After that, if cooperation is no better, one should explain to the patient that Daddy or Mummy must be told; otherwise, we shall both be in trouble as the treatment is not doing any good. The report is made in the presence of the

child, not more censoriously than the occasion demands, and the matter is discussed in full. The patient will usually see the justice of this. If this course is unproductive, it is often better to suspend treatment until the child is interested in and even anxious about his personal appearance.

My personal experience of night treatment has been that not all patients are suitable. I have sometimes found that if an appliance is worn throughout the twenty-four-hour period, cooperation may be 100 per cent, but that, if it is left out during the daytime, the little patient often forgets to wear it at night.

I am told that family discipline is more lax in some countries than it is in this, and I know that there are some parts of the world where orthodontists have a very special problem. This is a matter for profound consideration when choosing the type of appliance to be used, and it is clear that in certain parts of the world it might be possible to conduct an orthodontic practice using mainly removable appliances. I mention this matter so that we shall understand one reason why modern methods of functional treatment are not universally adopted. Our colleagues in other countries may have difficulties to contend with, which we do not fully appreciate.

I am not without sympathy for the problem of habits, but I think it is a great pity that parents are discouraged from taking steps to prevent a deformity, and I feel convinced that the attitude is a wrong one. There are cases of extreme difficulty (and cases for the psychologist), but deformities in most normal children could be corrected with a little firmness, if the parents were not beset with doubts and conflicting advice. The application of theoretical psychological principles to ordinary normal, healthy children is unnecessary, misleading, and harmful.

My experience with nervous children has been that if you make friends with them they will often become most excellent patients. They are usually gifted with imagination and intelligence, a two-edged sword which magnifies their fears, but at the same time magnifies their potentialities for affection and intelligent cooperation. Their faculties generally are more acute than the average.

Rix has given the name "smasher" to a type of child we all know. This type includes the uncooperative and the antagonistic, both of whom always have a perfectly good excuse for each separate accident. Firm measures are necessary, and all types of appliances should be tried before the case is abandoned, as it must be if there is no improvement.

But there is another kind of "smasher" who is well-meaning, as will be seen when he appears repeatedly with the frayed remnants of his appliance, which he continues to wear, shedding bits as he goes along but persevering doggedly with the remains, which he balances in his mouth by some miracle of dexterity. It is puzzling to know what to do about these well-intentioned "smashers" because, of course, the case suffers repeated setbacks, and fixed appliances are often worse than removable ones. We do not even know the cause, unless it is toffee, or cracking nuts. The annoying thing about "smashers" is that the parent is always inclined to be reproachful toward us as if it is the fault of our appliance every time. Beyond reasonable limits parents must be made to pay for the damage. There is no alternative remedy.

On no account should orthodontic treatment be free. That which costs nothing is valued at exactly nothing. If a poor parent pays only a penny or twopence a visit toward the cost of treatment, then the appliances have some value, and are respected accordingly. But in a disappointingly large number of cases "no expense" means "no cooperation."

News and Notes

American Board of Orthodontics

The 1950 meeting of the American Board of Orthodontics will be held at the Edgewater Beach Hotel, Chicago, Illinois, May 4, 5, 6, and 7. Orthodontists who may desire to be certified by the Board may obtain application blanks from the Secretary, Dr. Stephen C. Hopkins, 1726 Eye Street, N. W., Washington 6, D. C. Applications must be completed not later than March 1, 1950, for consideration at the Chicago meeting.

Prize Essay Contest, American Association of Orthodontists

Eligibility.—Any member of the American Association of Orthodontists; any person affiliated with a recognized institution in the field of dentistry as a teacher, researcher, undergraduate, or graduate student shall be eligible to enter the competition.

Character of Essay.—Each essay submitted must represent an original investigation and contain some new significant material of value to the art or science of orthodontics.

Prize.—A cash prize of $500 is offered for the essay judged to be the winner. The committee, however, reserves the right to omit the award if in its judgment none of the entries is considered to be worthy. Honorable mention will be awarded to those authors taking second and third places. The first three papers will become the property of the American Association of Orthodontists and will be published. All other essays will be returned.

Specifications.—All essays must be typewritten on 8½ by 11 inch white paper, double-spaced, with 1 inch margins, and composed in good English. Three copies of each paper complete with illustrations, bibliography, tables, and charts must be submitted. The name and address of the author must not appear in the essay. For purposes of identification, the author's name together with a brief biographical sketch which sets forth his or her dental and/or orthodontic training, present activity, and status (practitioner, teacher, student, research worker) should be typed on a separate sheet of paper and enclosed in a sealed envelope. The envelope should carry the title of the essay.

Presentation.—The author of the winning essay will be invited to present it at the meeting of the American Association of Orthodontists to be held in Chicago, Illinois, May 8 to May 11, 1950.

Final Submission Date.—No essay will be considered for this competition unless received in triplicate by the chairman of the research committee on or before March 15, 1950.

ALLAN G. BRODIE, CHAIRMAN RESEARCH COMMITTEE,
AMERICAN ASSOCIATION OF ORTHODONTISTS,
30 NORTH MICHIGAN AVENUE, CHICAGO 2, ILLINOIS.

Thomas P. Hinman Mid-Winter Clinic

The Thirty-seventh Annual Meeting of the Thomas P. Hinman Mid-Winter Clinic will be held at the Municipal Auditorium, Atlanta, Georgia, March 19, 20, 21, and 22, 1950. The general chairman is Dr. Sidney L. Davis, 932 Candler Building, Atlanta, Georgia, exhibit chairman, Dr. J. A. Broach, 1105 Doctors Building, Atlanta, Georgia.

Central Section of the American Association of Orthodontists

The Central Section of the American Association of Orthodontists held its annual meeting at Hotel Sheraton, St. Louis, Missouri, Sept. 25, 26, and 27, 1949. The following program was presented:

MONDAY, SEPTEMBER 26

Morning

President's Address. Joseph H. Williams, St. Louis, Missouri.

Practical Procedures With the Twin Wire Appliance. Clare K. Madden, Greenwich, Connecticut.

Case Report. Howard E. Strange, Chicago, Illinois.

The Role of Observation and Simple Treatment in the Practice of Orthodontics. Harlow L. Shehan, Jackson, Michigan.

Afternoon

The Use of the Occlusal Guide Plane. Boyd W. Tarpley, Birmingham, Alabama.

The Use of the Edgewise Appliance in Extraction Cases. Howard J. Buehner, Oak Park, Illinois.

Minimizing the Need of Mechanized Orthodontic Therapy. R. C. Willett, Peoria, Illinois.

Case Report. Earl E. Shepard, St. Louis, Missouri.

TUESDAY, SEPTEMBER 27

Morning

Case Report. Use of Kesling Positioner. B. W. Cordes, St. Louis, Missouri.

Some Considerations on the Diagnosis of Malocclusion Relative to Extraction. Edward A. Cheney, Lansing, Michigan.

The Influence of Orthodontics on Functional Speech. Mildred A. McGinnis, St. Louis, Missouri.

Dental Aid for Better Speech. L. W. O'Brien, St. Louis, Missouri.

Case Report. Cephalometric Appraisal of a Treated Mandibular Displacement Case in an Adult Patient. James W. Ford, and William F. Ford, Chicago, Illinois.

Afternoon

Facial Development and Genetic Influences. H. D. Stalker, St. Louis, Missouri.

Round-Table Discussion. How Can Our Specialty Meet Its Responsibility in the Demand for Orthodontic Services for the Masses? H. C. Pollock, St. Louis, Missouri, *Moderator.*

Participants:
Chas. R. Baker, Evanston, Illinois.
B. G. deVries, Minneapolis, Minnesota.
L. B. Higley, Iowa City, Iowa.
Paul G. Ludwick, Lincoln, Nebraska.
L. M. Shanley, St. Louis, Missouri.
Ruth Martin, St. Louis, Missouri.
Wm. A. Murray, Evanston, Illinois.

Business Session.

Northeastern Society of Orthodontists

The Northeastern (formerly New York) Society of Orthodontists held its fall meeting Nov. 28 and 29, 1949, at the Grand Ball Room, Hotel Commodore, New York, City.

The program follows:

MONDAY MORNING

Traumatic Occlusion: Etiology, Diagnosis, and Treatment. SAMUEL CHARLES MILLER, D.D.S., New York, New York. (The types of traumatic occlusion, relationship of traumatic occlusion to repositioning of the mandible, retention after orthodontic procedures, and technique of equilibration.)

Tissue Changes in Orthodontics. MYRON S. AISENBERG, D.D.S., Baltimore, Maryland. (A review of the physiology of the attachment apparatus correlated with tissue changes in orthodontic movement of teeth. Retained deciduous teeth will also be discussed.)

A Study on the Angular Relationship in the Upper and Lower Anterior Teeth. M. B. MARKUS, D.D.S., Philadelphia, Pennsylvania. (An analysis of the segments of the incisor mandibular plane angle.)

Some Aspects of Medicine Pertaining to Orthodontics. SIDNEY C. WERNER, B.A., M.D.-Sc., New York, New York. (A brief discussion of physiologic and pathologic considerations of the body as a whole will be made in relation to the problems of the orthodontist.)

MONDAY AFTERNOON

Orthodontics as a Health Service. JOHN T. FULTON, D.D.S., Washington, D. C. Mankind has reached a point where his knowledge and control of the physical sciences must be brought into balance with his social outlook. The role of orthodontic service in helping to solve these problems must be earnestly and scientifically examined.

Evolutionary Trends in Orthodontia, Past, Present, and Future. CHARLES H. TWEED, D.D.S., Tucson, Arizona. (The importance of: [1] positioning mandibular incisors on basal bone; [2] working knowledge of the Frankfort-mandibular plane angle; [3] mental picture of the normal in treatment planning. Attainment of normal occlusion by orthodontic therapy is limited. Future development of interception and prevention of malocclusion to shorten present-day periods of mechanics, thus reducing the toll on investing tissues.)

Clinics for Guests. West Ball Room

CHARLES H. TWEED, D.D.S.
HARRY L. BULL, D.D.S.
CARLOS CORO, D.D.S.
ARTHUR V. GREENSTEIN, D.D.S.
RALPH W. HODGES, D.D.S.
WILLIAM G. HOUGHTON, D.D.S.
EUGENE J. KELLY, D.D.S.
HERBERT I. MARGOLIS, D.D.S.
OTTO SORENSON, D.D.S.
BRAINERD F. SWAIN, D.D.S.
WILL M. THOMPSON, JR., D.D.S.
GLENN H. WHITSON, D.D.S.

TUESDAY MORNING

Case Report. ASHLEY E. HOWES, D.D.S., New Rochelle, New York.

Rehabilitation of the Cleft Palate Patient. WILLIAM G. HOUGHTON, D.D.S., and WILLARD M. WOOD, B.S., Watertown, New York. (Intraoral aspects of congenital cleft palate and speech appliance adaption, together with voice recordings of individual cases.)

Message From the President of the American Dental Association. PHILIP E. ADAMS, D.M.D., Boston, Massachusetts.

The Temporomandibular Joint: Its Position and Functional Reaction in Changing Dental Relations. SIDNEY E. RIESNER, D.D.S., New York, New York. (The mandibular articulation assumes unsuspected relations in response to occlusal changes. Motion pictures made directly from a fluoroscopic screen reveal hitherto unexpected control of the joint during function.)

TUESDAY AFTERNOON

The Orthodontist, the Child, and the Parent. BYRON O. HUGHES, Ph.D., Ann Arbor, Michigan. (A discussion of the principles involved in child management and in the growth and hereditary biology of the dentofacial complex.)

A Consideration of the Problems of Malocclusion in Mixed Dentitions. EDWARD R. STRAYER, D.D.S., Philadelphia, Pennsylvania. (A viewpoint on the question of treating mixed dentitions and the value of treatment of some conditions at the opportune time, thus preventing major orthodontic problems.)

Clinics for Guests. West Ball Room

1. The Bite Block. HORACE P. CLARK, D.D.S.
2. What Age Orthodontic Treatment? CHARLES J. GOLDTHWAITE, D.D.S.
3. Various Types of Treatment. NICHOLAS IPPOLITO, D.D.S.
4. Distal Movement of Maxillary Cuspids With a Bite Plate Coincident With Bite Opening. VINCENT P. MARRAN, JR., D.M.D.
5. The Lingual Arch as an Adjuvant in the Distal Movement of Molars. DONALD B. WAUGH, D.D.S.
6. Cephalostatic Kodachromes. CARL ZEISSE, A.B., D.D.S.
7. Clinic Illustrating Paper. SIDNEY E. RIESNER, D.D.S.

Clinics for Members

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Oscar Jacobson, Secretary-Treasurer.

Rocky Mountain Society of Orthodontists

The annual fall meeting of the Rocky Mountain Society of Orthodontists was held in Denver, Colorado, on Nov. 14 and 15, 1949.

MONDAY, NOVEMBER 14

8:30 A.M.— 9:00 A.M.	Registration—Clinic Room, Rocky Mountain Metal Products Company, 1450 Galapago Street.
9:00 A.M.—10:25 A.M.	The History and Use of the Kesling Tooth Positioner. Wm. A. Elsasser.
10:35 A.M.—12 Noon	Extraoral Anchorage, Its Indications, Use, and Application. Donald A. Closson.
12:15 P.M.— 2:P.M.	Round-Table Luncheon.
2:15 P.M.— 4:00 P.M.	Extraoral Anchorage Fabrication. Donald A. Closson.
Split Session Clinics	Fabrication of Kesling Tooth Positioner. Wm. A. Elsasser.

TUESDAY, NOVEMBER 15

9:00 A.M.—10:45 A.M.	Repeat Monday's Clinic. Dr. Elsasser.
Split Session Clinics	Repeat Monday's Clinic. Dr. Closson.
11:00 A.M.—12 Noon	Cinefluoroscopic Study of Movements of the Temporomandibular Joint. (Courtesy of Dr. Sidney E. Riesner.) A motion picture.
12:15 P.M.— 2:00 P.M.	Round-Table Luncheon.
2:15 P.M.— 4:15 P.M.	Report on Traumatic Occlusion Seminar. B. T. Ritchey.
4:25 P.M.— 5:00 P.M.	Business Meeting.

Sixth Annual Seminar for the Study and Practice of Dental Medicine

The Sixth Annual Seminar for the Study and Practice of Dental Medicine was held Oct. 23 to Oct. 28, 1949, at Palm Springs, California.

Highlight of the intensive four-day sessions was a special panel discussion at which six guest lecturers answered searching questions on such diversified subjects as the application of atomic energy in dental medicine, the use of fluorides to combat tooth decay, proper bone structure in children, and diseases of the chest.

Dr. Becks announced that the Seventh Annual Seminar will be held at Palm Springs, California, Oct. 15 to Oct. 20, 1950.

Southwestern Society of Orthodontists

The next annual meeting of the Southwestern Society of Orthodontists will be held at the Shamrock Hotel, Houston, Texas, Feb. 12-15, 1950.

Chicago Association of Orthodontists

The program for the Chicago Association of Orthodontists for 1949 and 1950 follows:

OCTOBER 24, MONDAY EVENING

Essay. A History of the Chicago Association of Orthodontists. Charles R. Baker.
Case Report. William B. Downs.
Case Report. Howard E. Strange.
Case Report. James C. Toothaker.

NOVEMBER 28, MONDAY EVENING

Aims in Orthodontics. Emery J. Fraser, Seattle, Washington.

JANUARY 30, MONDAY EVENING

Practical Thoughts on Orthodontics. Lowrie J. Porter, New York, New York.

MARCH 27, MONDAY EVENING

An Analysis of Tooth Movements Resulting From Orthodontic Forces. Ashley E. Howes, New Rochelle, New York.

APRIL 24, MONDAY EVENING

Individual Case Analysis Relative to Extraction. Edward A. Cheney, Lansing, Michigan.

Children's Bureau, Federal Security Agency

Five top-notch authorities in highly specialized fields of maternal or child health have been appointed part-time consultants to the Division of Health Services of the Children's Bureau, Federal Security Administrator Oscar R. Ewing announced today. Their primary responsibilities will be to advise the Bureau staff and state health agencies on programs of obstetric care, on hearing and speech problems of children, cerebral palsy, child psychiatry, and on the care of prematurely born infants. The appointments were made by Katharine F. Lenroot, Chief of the Children's Bureau.

In addressing the forty-eighth annual conference of the Association of State and Territorial Health Officers, meeting in Washington recently, Dr. Leona Baumgartner, Associate Chief of the Bureau, said that many states and territories have been requesting such consultation service for some time.

"This service marks a new departure in consultation provided by the Children's Bureau in that it will begin to make available throughout the country top-quality medical advice in these fields, heretofore available only in a relatively few States," Dr. Baumgartner explained. "With these consultants available through the Bureau, more States will be able to improve the quality of care provided in their maternal and child health and crippled children's programs.

"The new consultation service is but one more way that the Children's Bureau is carrying out the responsibilities Congress charged it with—to help States and communities develop the best possible health services for mothers and infants. And this is the kind of service that will be expanded, especially in providing better care for infants born prematurely, as more funds become available."

Dr. Baumgartner explained that the specialists will continue their private practices and teaching positions, but will, from time to time, work with state health officials as requests are directed to the Children's Bureau. The specialists will be concerned solely with the quality of medical care provided under the programs.

The names of the new consultants follow:

Dr. Harry H. Gordon, Professor of Pediatrics at the University of Colorado, has taken an active part in the development of one of the leading state-wide programs for the care of prematurely born infants; this program is now in operation in Colorado. He will be available for consultation on premature programs in other states.

Dr. William G. Hardy, Director of the Hearing and Speech Center at Johns Hopkins School of Medicine in Baltimore, has helped make Maryland perhaps the leading state in programs to help children with hearing and speech problems. He will consult in this field.

Dr. Meyer A. Perlstein, Professor of Pediatrics at the Cook County Postgraduate Medical School in Chicago, has worked extensively with children with cerebral palsy. He will be available to advise state health agencies in developing programs in their field.

Dr. Grete L. Bibring, Chief of Psychiatric Services at Beth Israel Hospital in Boston, who has had wide experience in dealing with maladjusted children, has helped in developing maternal and child health programs, as well as programs for crippled children. She will consult on the mental health aspects of state child health programs.

Dr. John Whitridge, Jr., Assistant Professor of Obstetrics at Johns Hopkins and Obstetric Consultant to the Maryland Department of Health, will be available for consultation to other state health departments wanting to extend their obstetric services, particularly in rural areas.

Too many infants and mothers in childbearing die in rural America, Dr. Leona Baumgartner, Associate Chief of the Children's Bureau, reported today to Oscar R. Ewing, Federal Security Administrator.

"The risk of a baby's dying during his first year of life is nearly one-third greater in outlying country places than in or near our great cities. With mothers, the risk is over 50 per cent greater," Mr. Ewing revealed. "There is every reason to believe that if rural mothers and babies had the same chance for medical and hospital care and for health services that city mothers and babies have, we could make the business of being born as safe in the country as in the big cities."

An analysis just made by the Children's Bureau shows that as one moves out from the large medical centers the death rate for both mothers and babies increases. Of 1,000 babies born in or near large cities during 1943-1947, 31 died before their first birthday. In more isolated counties, death rates rose as high as 41. For mothers dying in childbirth the same pattern holds true, the rate being 15 per 10,000 live births in greater metropolitan areas, as compared with 23 in isolated counties—an increase of 50 per cent. The original data came from the National Office of Vital Statistics in the Federal Security Agency.

"As a nation, we are doing a good job of making childbirth increasingly safe," Dr. Baumgartner reported. "By 1947, we had brought down the United States maternal mortality rate 64 per cent and the infant mortality rate 32 per cent from their levels in 1940. Present rates compare favorably with the best known records of other countries. But our job is not done, so long as any mother or child dies needlessly.

"One of the important fronts on which we must work still further in saving lives is in rural areas remote from the great urban centers. Between the beginning of the war and the first two postwar years, the gap between lower infant death rates in or near great cities and relatively high rates in isolated counties was notably reduced in the case of mothers, however, the gap widened. Those gaps should be entirely wiped out. Small rural hospitals may be entirely adequate to handle uncomplicated cases of childbirth, but when complications arise the skills and resources of big hospitals must be rushed out to the mother, or she must be brought in quickly to such hospitals. Mothers who hemorrhage in childbirth must get the right type of blood quickly, if their lives are to be saved. When infections occur, laboratory tests that can be quickly made are essential. A skilled obstetrician is needed when severe toxemias develop. When a baby is prematurely born, he may need oxygen and expert nursing care immediately, if he is to live," Dr. Baumgartner said.

"The Children's Bureau is working with the States to help them develop a network of services that will reach more of these mothers and babies. Under the authority given to it by Congress, the Bureau, in allotting Federal grants to the States, provides for a larger proportion of funds to States with relatively large numbers of births and children in rural areas," Dr. Baumgartner explained.

Citing figures from a study of child health services recently made by the American Academy of Pediatrics, in cooperation with the United States Public Health Service and the Children's Bureau, Dr. Baumgartner called attention to the fact that children in isolated

counties are receiving one-third less medical care than those in or near large cities. For every 1,000 children there are nearly 6 doctors in greater metropolitan counties, but only one or two in nonmetropolitan areas. In metropolitan and adjacent counties there are 15 general hospital beds per 1,000 children; in remote counties, 8. In 2,000 of the nation's 3,000 odd counties, where 31 per cent of the nation's children under 5 years of age live, no well child clinics are held.

"These evidences of the dearth of medical and hospital care in rural America are symptomatic of one reason why too many mothers and babies are dying," Dr. Baumgartner reported. "While State health departments are trying to build up their maternal and child health services to reach outlying regions, they need a great deal more help than they are getting now if good medical and hospital care is to be within reach of all mothers and babies.

"The $11 million which Congress appropriates each year, and which the Children's Bureau administers, to help States develop their life-saving and health-building services don't go very far when they have to spread over the whole Nation in all kinds of public health services for older children as well as infants. Helping States build up a network of health centers and services that will reach out to the most remote mother and child is a life-saving job on which all citizens can work."

American Medical Association

The Board of Trustees of the American Medical Association issued a public statement "protesting the use of a police arm of the Government—namely, the Anti-Trust Division of the Department of Justice—in a campaign to discredit American medicine and terrorize physicians into abandoning their opposition to Compulsory Health Insurance."

The statement revealed that sixteen state and county medical societies, and other medical organizations, including the A. M. A. itself, have been made the targets for investigations by the Anti-Trust Division of the Justice Department during the past thirty days.

The medical groups suddenly brought under investigation, it was announced, include the following:

American Medical Association, New York State Medical Society, Utah State Medical Association, Washington State Medical Society, Arkansas Medical Society, and the Oklahoma State Medical Association.

Michigan Medical Service, a Blue Shield prepaid medical care plan, and the Arkansas Blue Cross-Blue Shield Plan.

Los Angeles County Medical Society, California; Beckham County Medical Society, Oklahoma; Wayne County Medical Society, Michigan; Harris County Medical Society, Texas; King County Medical Society, Washington, and the New York County, Nassau County, and Queen's County Medical Societies in New York State.

The A. M. A. statement follows:

"This is an official statement of the Board of Trustees of the American Medical Association, protesting the use of a police arm of the Government—namely, the Anti-Trust Division of the Department of Justice—in a campaign to discredit American medicine and terrorize physicians into abandoning their opposition to Compulsory Health Insurance.

"The A. M. A. has opened its records to the Justice Department, without reservation, and medical societies throughout the country undoubtedly will do likewise, but we intend to keep the public fully informed of developments, as we are convinced that these are not bona fide anti-trust investigations, and that the American people will not tolerate Police State methods in this country.

"We would be naive, indeed, if we ignored the political implications of this sudden rash of investigations, attacking medical societies, at a time when the Administration is doing its utmost to stifle opposition to its proposed system of Government-controlled medical care.

"This scheme, it is specifically provided, would be a Government-monopoly, to which every citizen would be compelled to contribute, and which would destroy all the hundreds of Voluntary Health Insurance systems which now provide prepaid health care for more than 61,000,000 of the American people.

"Certainly it will be a travesty on justice if the Anti-Trust Division of the Justice Department can be used to silence opposition to the creation of a Government-trust in medicine.

"The American people, we believe, will hardly think it a coincidence that these anti-trust investigations should be ordered at this time—after there have been repeated threats that medical groups would be 'investigated' because of their opposition to socialized medicine.

"The chronology of events, since the American Medical Association decided to make a Nation-wide campaign against Compulsory Health Insurance, and in behalf of Voluntary Health Insurance, is, we believe, of real significance.

"In November, 1948, the A. M. A., at its mid-winter meeting, voted to collect funds from its members to finance a campaign of public education on this issue. A public announcement was made to that effect.

"Only a month later, in December, agents of the Department of Justice called on the Chicago Medical Society, seeking to check the Society's records in connection with an alleged anti-trust investigation.

"During the February session of the Board of Trustees of A. M. A. in the early hours of February 10, the Board Room was broken into and records of the Board were thoroughly searched by persons unknown. Briefcases of the Trustees, left in the room, also were searched. Entrance was gained through a window. The facts indicate this was a search for information, rather than an ordinary burglary. Certainly no friends of medicine would take this means of obtaining medical data.

"A few weeks later, toward the end of February, Administration leaders began threatening medical societies and medical men with 'investigation' as part of their campaign to discredit and intimidate the medical profession. Since then, there hasn't even been much attempt to disclaim the political nature of these investigations.

"On February 28, 1949, for example, one of the National press associations carried a dispatch from Washington quoting Government officials as stating that anti-trust actions would be started against 'several' medical societies soon after the Compulsory Health Insurance drive was started in Congress.

"The implication was plain that the 'investigation' would be part of the Administration's campaign for its socialized medicine scheme.

"The threats made then are now realities. An epidemic of 'investigations,' aimed at medical societies and Voluntary medical care plans, has broken out in widely separated States and cities all over the country.

"We want it clearly understood that we believe this attack on the medical profession stems from the Anti-Trust Division of the Justice Department and political string-pullers who have exerted influence on that agency. We believe it to be an outrageous abuse of public power which far transcends in gravity the issue of Compulsory Health Insurance, vital as that issue is.

"We recognize that politically-motivated attacks have been made on many other groups by this division of the Government—and we invite their cooperation with American medicine in an effort to alert the American people to the seriousness of this trend toward Police State methods. If the police arm of the Government is used to intimidate doctors and others, and this abuse of power goes unchallenged, it may next be used to terrorize publishers or grocers, farmers or lawyers, Catholics or Jews, or any other minority in the Nation."

Notes of Interest

Dr. Irving Buchin announces the opening of an office for the exclusive practice of orthodontics at 108-50 71st Avenue, Forest Hills, New York, hours by appointment, telephone, LIggett 4-1328; New York office, 1 West 81st Street, telephone, SChuyler 4-4122.

Charles F. Labas, D.D.S., announces the opening of his office for the exclusive practice of orthodontics at 135 W. Main Street, Waterbury, Connecticut, telephone, 6-1213.

Joe Tennyson Reece, D.D.S., member of the American Association of Orthodontists, wishes to announce removal to his new office at 2415 East 15th Street, Tulsa, Oklahoma, telephone, 9-7387.

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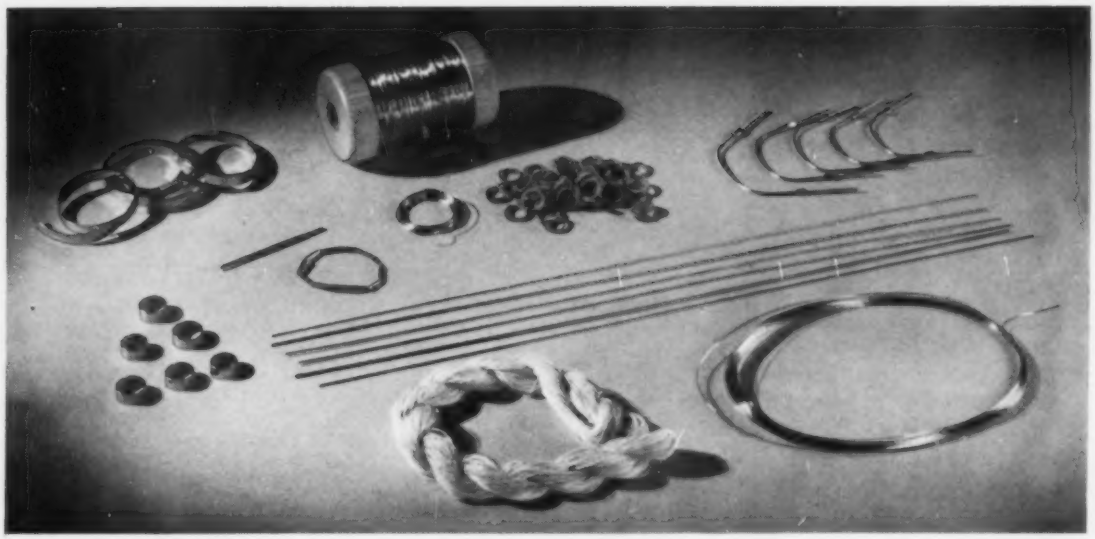

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